

CULTURAL RESOURCES SITE TESTING AND GEOLOGICAL INVESTIGATIONS AT FORT SILL MILITARY RESERVATION, FORT SILL, OKLAHOMA

by
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FORT SILL MILITARY RESERVATION TECHNICAL SERIES
REPORT OF INVESTIGATIONS
NUMBER 9



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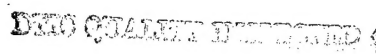
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Front cover: Crowd gathered near school at El Reno, Oklahoma Territory, waiting for lottery drawing, August 1901 (photo courtesy of the Oklahoma Historical Society).

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FORT SILL MILITARY RESERVATION TECHNICAL SERIES
REPORT OF INVESTIGATIONS
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550 East 15th Street
Plano, Texas 75074

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MANAGEMENT SUMMARY

This report presents the results of two programs of archeological fieldwork recently conducted within the Fort Sill Military Reservation, Comanche County, Oklahoma. The first involved the coring, pedestrian survey, and geoarcheological assessment of a 20-ac tract located on the East Cache Creek floodplain; this parcel is proposed as the site of a new military truck-wash facility. The second program of archeological fieldwork entailed a series of test excavations at 15 archeological sites scattered across the Military Reservation. Archival research was also conducted to collect information on some of the historic sites tested and to assist in the assessment of the significance of these sites. The cultural resources assessments presented here represent one phase of the efforts of the Fort Sill Military Reservation to meet its legal responsibilities for the identification, evaluation, and treatment of historic properties under its jurisdiction. This research was conducted under contract with the U.S. Army Corps of Engineers, Tulsa District. The work was conducted by the Cultural Resources Division of Geo-Marine, Inc., between October and December of 1995; additional archival work was performed in January and February 1996.

During the course of the coring program, 25 core holes were excavated, using a commercial coring rig. This exercise provided extensive evidence of an active, energetic floodplain environment, the alluvial processes and subprocesses of which made correlations between various profiles extremely difficult. In all cases the water table was encountered 3.3 m to 5 m below the surface; in several cases, bedrock was detected at depths approaching 9 m, as expected from previous observations along the East Cache Creek streambed. No cultural resources were identified during the coring process, with the exception of a series of World War I howitzer emplacements which had been previously recorded.

Of the 15 archeological sites subjected to Phase II data recovery excavations, six sites (34Cm-42, 34Cm-58, 34Cm-235, 34Cm-407, 34Cm-425, and 34Cm-476) were prehistoric in nature, while six (34Cm-107, 34Cm-401, 34Cm-405, 34Cm-414, 34Cm-418, and 34Cm-488) were of the historic period; the remaining three sites (34Cm-239, 34Cm-315, and 34Cm-428) were multicomponent, containing both prehistoric and historic elements. All the sites showed prior disturbance, mostly caused by extensive erosion and military activity, and tend to be shallow and surficial. Only one site, 34Cm-414, exhibits sufficient contextual integrity and/or cultural significance to be recommended as eligible for inclusion in the National Register of Historic Places. A second site, 34Cm-488, is ineligible, but includes an intact storm shelter in excellent condition which should be preserved and protected. The remaining 13 sites are considered to be ineligible for inclusion in the National Register of Historic Places and are not recommended for further work or preservation.

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Artifact analysis and data input were undertaken by the staff of Geo-Marine, Inc., under the direction of Ms. Marianne Marek, Laboratory Director. The prehistoric artifacts were analyzed and described by Mr. Largent, while Ms. Green analyzed and described the historic artifacts. The technical editor was Ms. Sharlene N. Allday, who also supervised the layout and design of the report and was responsible for the final production. Artifact illustrations were produced by Ms. Julianne Gadsden; computer-generated site maps and geologic profiles were provided by Ms. Krapf and Ms. Sandra Carr. Ms. Denise Pemberton was responsible for the final formatting, assembling, and production of the document.

CHAPTER 1

INTRODUCTION

by
Floyd B. Largent, Jr.

This report chronicles the results of two programs of archeological fieldwork recently conducted on the Fort Sill Military Reservation in Comanche County, Oklahoma (Figure 1): (1) a program of coring, pedestrian survey, and geoarcheological assessment of a 20-ac tract located on the East Cache Creek floodplain, proposed as the site of a new military vehicle wash facility; and (2) test excavation of 15 archeological sites (six prehistoric, six historic, and three multicomponent) scattered across the installation. The Fort Sill Military Reservation, as a federally owned installation, has a responsibility for managing approximately 95,000 acres of land in southwestern Oklahoma. The report presented herein is in compliance with several mandates connected with this management responsibility. These directives are defined in the *National Historic Preservation Act of 1966* [PL 89-665 et seq.], as amended through 1992; the *Archaeological and Historic Preservation Act of 1974* [PL 93-291 et seq.]; Executive Order No. 11593, *Protection and Enhancement of the Cultural Environment*; and Army Regulation 420-40, *Historic Preservation*.

Both projects were carried out by the Cultural Resources Division of Geo-Marine, Inc. (GMI), of Plano, Texas, under Contract No. DACW56-92-D-0010, Delivery Order No. 36, with the U.S. Army Corps of Engineers (USACE), Tulsa District. The coring and associated pedestrian survey were performed by two archeologists and a coring contracting crew from October 22-31, 1995. The Phase II test excavations were carried out from November 13-December 4, 1995, and involved a crew of six to seven individuals (four crew members, a Field Supervisor, and one to two Project Archeologists), deployed as a single excavation team.

Personnel from GMI conducted the field investigations at Fort Sill under the direction of the Principal Investigator, Mr. Duane E. Peter, and the Project Archeologists, Mr. Floyd B. Largent, Jr., and Ms. Melissa M. Green. Approximately 16 person-days were required to complete the coring program, with an estimated 103 person-days expended while conducting the test excavations. An additional 19 person-days were used in January and February 1996 for additional archival research relating to several historic sites examined during the course of the fieldwork.

No new sites were discovered as a result of the coring program; however, geoarcheological examination of the core data revealed an extremely active floodplain upon which archeological sites would most likely not be preserved. As a result of the data recovery excavations, it was determined that 14 of the 15 tested sites are ineligible for inclusion on the National Register of Historic Places (NRHP) due to poor contextual integrity, the lack of association with significant historical events or persons, and/or the limited research potential of the assemblages. However, one site (34Cm-414) is recommended as NRHP-eligible and is recommended for preservation, while a second (34Cm-488), although unremarkable otherwise, contains a

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unique, intact structure requiring preservation. All 15 archeological sites showed some degree of disturbance, ranging from light to heavy impacts. Many had been impacted within the six months prior to their discovery.

This report is presented in seven chapters. Chapter 2 presents the environmental setting of the study area. Chapter 3 documents the history of Euro-American settlement in the Fort Sill region. Chapter 4 outlines the conceptual framework and research methodologies that guided these research efforts. The results of geologic fieldwork conducted at the proposed truck-wash facility on the East Cache Creek floodplain are presented in Chapter 5. Site descriptions, excavation results, analysis of historic and prehistoric artifacts, and the results of archival research are presented in Chapter 6. A summary of the findings and site assessments, evaluations of site predictive models, and recommendations are presented in Chapter 7. Appendix A presents the profile and backhoe trench descriptions. Appendix B consists of the definitions of prehistoric artifact classes, the coding form used for prehistoric artifact analysis, and the summary table for prehistoric artifacts. Appendix C presents the coding form used for historic artifact analysis and the summary table for historic artifacts. Finally, the results of the faunal analysis of skeletal material from five sites is presented in Appendix D.

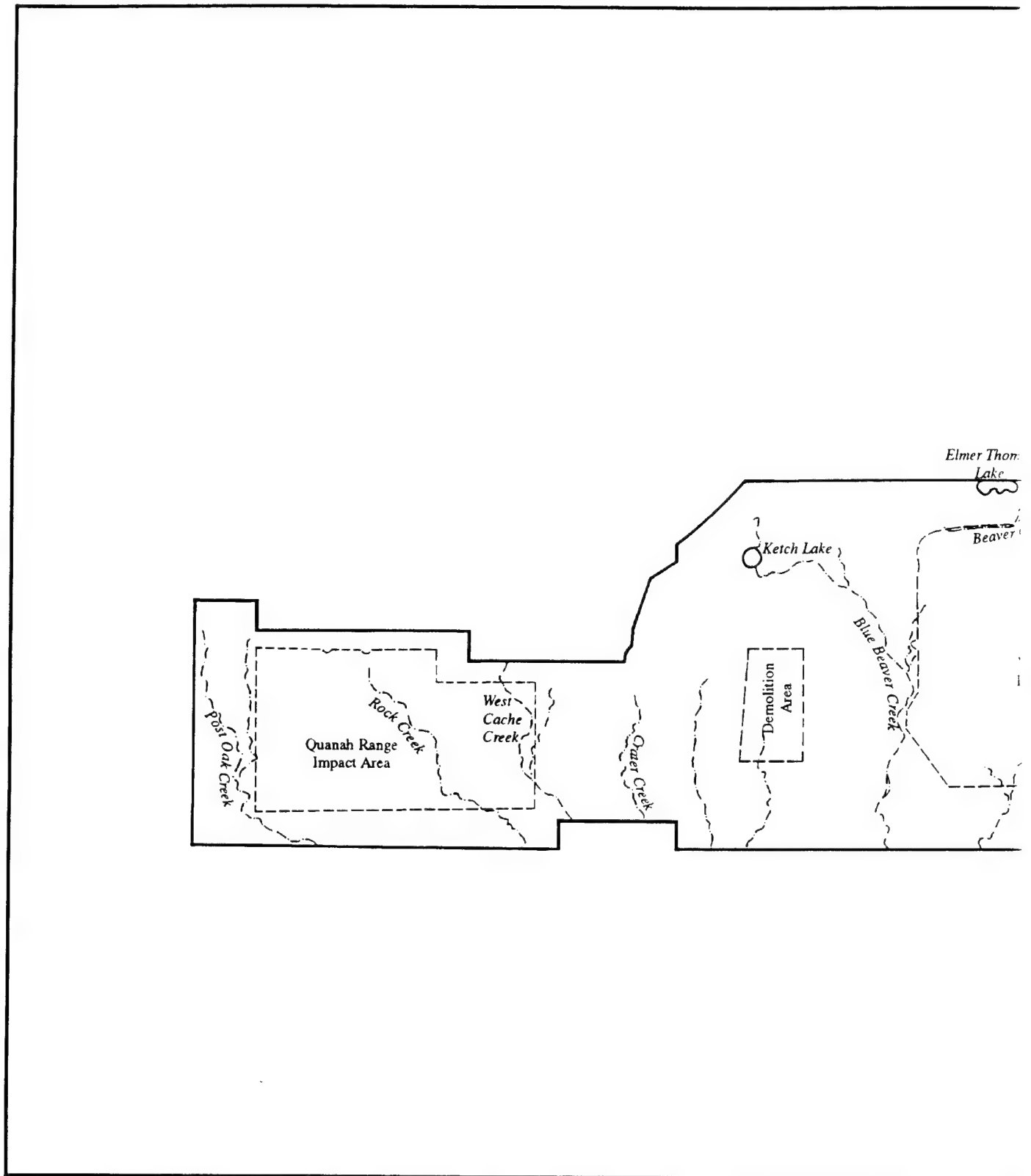
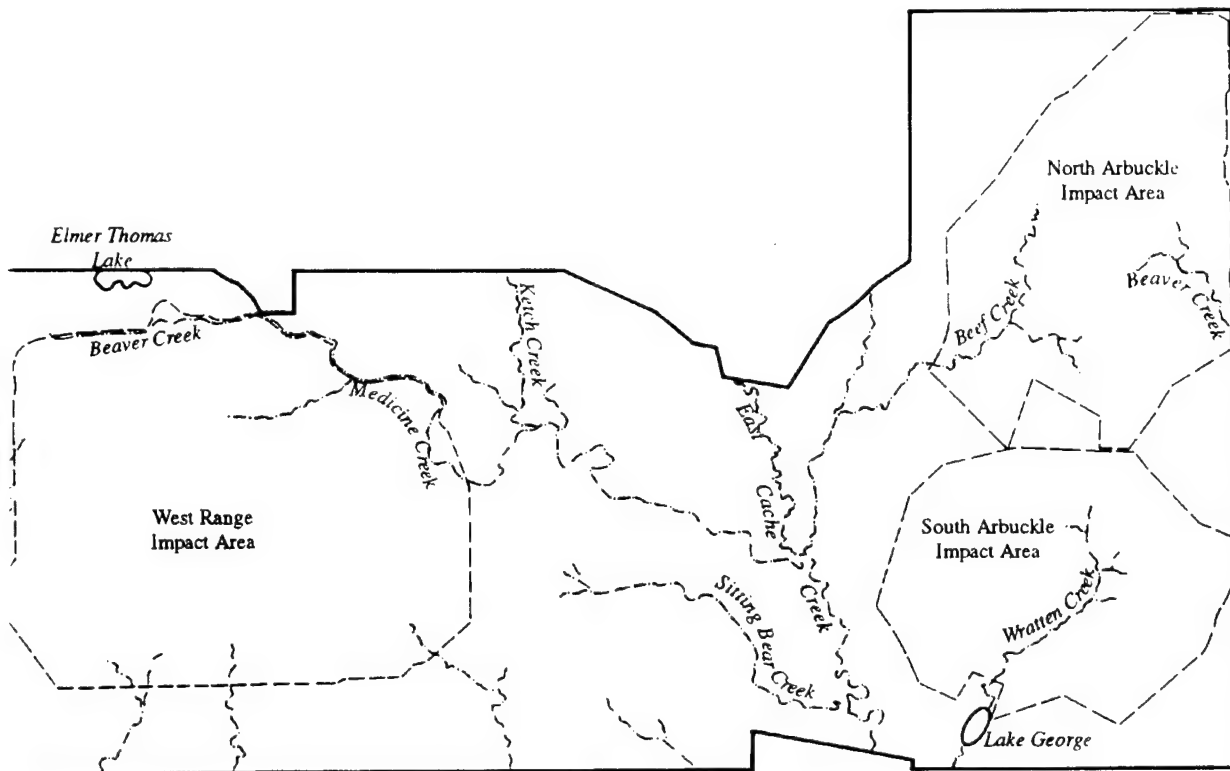


Figure 1. Map of the Fort Sill Military Reservation.



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CHAPTER 2

ENVIRONMENTAL SETTING

by
Gathel M. Weston

GEOLOGY AND GEOMORPHOLOGY

The near-surface bedrock in the Fort Sill area consists of Permian age formations which extend east-west from central Oklahoma to the Llano Uplift in the Texas Panhandle, and north-south from Nebraska to central Texas (Gould and Lewis 1926). Bordered by marine deposits of Pennsylvanian age on the east and nonmarine Tertiary deposits in the west, the Permian formations are primarily level sedentary beds derived from continental deposits overlying marine deposits. However, there is much variation, including some areas that are primarily marine in origin (Weissenborn and Stenzel 1948:12).

The Permian formations correspond to a large extent with the tall grass prairie and mixed grass plains of central and western Oklahoma. The Pennsylvanian formations underlie much of the Cross Timbers and, with the Ozark and Ouachita mountains, the eastern forests of Oklahoma. The Tertiary-aged deposits to the west, formed from sediments derived from the Rocky Mountains, underlie the short grass high plains.

Within the Fort Sill Military Reservation itself, shale with some sandstone composes the bedrock east of East Cache Creek (Dames and Moore 1980:19), with the Post Oak Conglomerate of the Hennessey Group forming the bedrock of the reservation west of East Cache Creek and south of the Wichita Mountains (Coffman et al. 1986:4). This conglomerate is composed of bedded pebble to boulder-sized clasts that fine outward from the Wichita Mountains (Donovan 1982:66-69). The clasts are for the most part granite and rhyolite, with sandstone and mudstone clasts in a limited area along East Cache Creek (Dames and Moore 1980:19).

The eastern range of the Wichita Mountains extends into the Fort Sill Military Reservation. Except for the section that has been exhumed by erosion, most of this mountain chain remains buried under Permian-aged and older sediments. Composed of basalt, granite, rhyolite, and gabbro, these ancient mountains appear to be little more than hills, impressive because of their location within the level plains rather than from any absolute prominence. However, up close they present a steep and formidable terrain, with numerous cliffs, narrow gorges, and steep, boulder strewn-slopes.

Limestone has only a limited distribution in the Fort Sill area, but has been economically significant during historic times. Quarry Hill, Evans Knob, and McKenzie Hill are all composed of limestone and have been quarried in the past (Dames and Moore 1980:19). Kerr Hill and a few other small areas are also formed of limestone.

TOPOGRAPHY

The topography in the Fort Sill area ranges from the gently rolling plains of the Permian Red Beds to the steep and rugged terrain of the Wichita Mountains. The western, south-central, and eastern portions of Fort Sill, including the cantonment area, consist of nearly level to gently rolling plains ranging in elevation from 329 and 466 m (1,079 to 1,525 ft) above mean sea level (amsl). The north-central portion of the Fort Sill Military Reservation, the northern boundary of the western portion of the reservation, and the northern boundary of the cantonment area are dominated by gently to moderately rolling plains and hills, with some areas deeply incised by upland drainages. Elevations range between 342 and 553 m (1,122 to 1,814 ft) amsl. The Wichita Mountains dominate the west-central portion of Fort Sill. This area is characterized by moderately to strongly rolling hills exhibiting abundant rocky outcrops and rounded crests. Elevations in this area range between 380 and 673 m (1,246 to 2,207 ft) amsl (Dames and Moore 1980:3-7).

SOILS

There are three major soil associations within the Fort Sill Military Reservation: Tillman-Vernon soils, Granitic Mountains-Tishomingo soils, and Rough Broken land-Vernon soils (Oklahoma Water Resources Board 1980:54a). The dominant soil association on the reservation is the Tillman-Vernon association, consisting of dark to reddish soils with clay subsoils developing from clayey Red Beds. Confined primarily to the Wichita Mountains, Granitic Mountain-Tishomingo soils are stony granitic soils that have a thin soil layer and are brown in color. Rough Broken land-Vernon soils are found east of East Cache Creek. These soils are similar to the soils found in the Tillman-Vernon association, but have a thinner soil layer and more extensive erosional areas.

According to the Conservation Plan for Fort Sill (U.S. Department of Agriculture, Soil Conservation Service [USDA, SCS] 1970) the Tillman-Vernon association contains the Foard Series silt loams, Hollister Series loams, Lawton Series loams, Lucien Series loams, Stamford Series clayey soils, Tillman Series clay loams, Vernon Series clays, and Zaneis Series loams. Approximately 33.3 percent of the sites excavated during the current project (n=5) fall within areas containing these soils.

The Rough Broken land-Vernon association contains small areas of Breaks-Alluvial land complex (loamy to clayey upland soils on broken and moderately steep slopes) interspersed with Zaneis Series loams, Vernon clays, Eroded Loamy land, and the Lucien-Zaneis-Vernon complex (sloping to strongly sloping soils on dissected, erosional uplands). Only a small area containing this soil association is located within the reservation boundaries. Just one of the current sites, 34Cm-315 (6.7 percent of the total), lies within this soil association.

The Granitic Mountain-Tishomingo soil association is confined to the Wichita Mountains in the western portion of the Fort Sill reservation. Included in this soil association are Granite Cobbly land, Granite outcrop, Rock land, and Stony Rock land. Granite Cobbly land can also be found in other areas outside the Granitic Mountain-Tishomingo soil association, particularly near Medicine Bluff and Rabbit Hill. Approximately 26.7 percent of the sites examined here (n=4) are located on Granitic Mountain-Tishomingo soils, exclusively on Granite Cobbly land.

Other soils occur on the Fort Sill Military Reservation that can not be placed in the above associations. Two soils, the Konawa Series loamy fine sand and Windthorst Series sandy loam, are generally associated with each other and Lawton loam. None of the sites occurred on Windthorst or Konawa loams. A third soil series known for the area includes the alluvial loams within the Port Series. These soils are found in all the

bottomlands within the reservation and along all but the lowest order drainages. A total of 26.7 percent of the sites tested (n=4) during the current project is on Port Series soils. A fourth soil, Limestone Cobbly land, occurs in small quantities on the plains south of the Wichita Mountains. One site, 34Cm-488 (6.7 percent of the total) is associated with this soil.

Port Series soils are the most agriculturally productive soils located on the Fort Sill reservation. Other soils that are suitable for cultivation are the Foard, Hollister, Konawa, Lawton, Stamford, Tillman, Vernon, Windthorst, and Zaneis soils. Soils on the reservation that are unsuitable for cultivation include the Breaks-Alluvial land complex, Eroded Clayey land, Eroded Loamy land, Granite Cobbly land, Limestone Cobbly land, Lucien soils, Rock land, and Stony Rock land.

HYDROLOGY

The Fort Sill area is located within the Red River drainage basin. Locally, more than 90 percent of the reservation is within the East Cache Creek basin, with a small portion of the eastern end within the Beaver Creek drainage basin (Dames and Moore 1980:3). Moving from east to west, the watercourses within the reservation are Ninemile Beaver Creek, Wratten Creek, Beef Creek, East Cache Creek, Sitting Bear Creek, Medicine Creek, Ketch Creek, East Branch Wolf Creek, Deer Creek, Blue Beaver Creek, West Branch Blue Beaver Creek, Crater Creek, Quanah Creek, West Cache Creek, Rock Creek, and Post Oak Creek. There are a number of other small ephemeral streams and over 50 reservoirs on the military reservation.

Except for Sitting Bear, Medicine, and Deer creeks, watercourses on the reservation tend to flow from north to south. East Cache Creek and Medicine Creek are the only perennial streams, with other streams having only ephemeral or seasonal flow (Dames and Moore 1980:3). The watercourses within the cantonment area have undergone extensive modification of their channels, including straightening of meanders and concrete lining of portions of Sitting Bear Creek and channelization of East Cache Creek.

CLIMATE

Southwestern Oklahoma experiences a semiarid to subhumid continental climate, with influences from three upper air systems. Dry air enters the region from the Rocky Mountains to the west; cold, dry arctic air enters from the north; and warm, moist air from the Gulf of Mexico enters from the south. These three air masses meet over the Southern Plains and create a weather pattern that is marked by long, hot summers and short, mild winters, with rapid weather changes and occasional periods of intense drought. Severe winter storms are rare in the Fort Sill area but the warmer months are often marked by strong, violent storm systems (Hofman et al. 1989:8).

Mean annual rainfall ranges from approximately 86 cm (34 in) at the eastern edge of the southwest Oklahoma region down to 66 cm (26 in) at the western edge, with mean annual rainfall in the Fort Sill area measuring approximately 76 cm (30 in) (Kawecki and Wyckoff 1984:7). Rainfall is at a maximum during the spring months, with a submaximum in August or September (Albert and Wyckoff 1984:18-29). The observed range of annual rainfall, recorded in the Wichita Mountains Wildlife Refuge over a 55-year period, is from 38 cm (15 in) in 1910 to 146 cm (57.5 in) in 1908 (Crockett 1964:328). Evapotranspiration generally exceeds precipitation in the Southern Plains region (Hofman et al. 1989:9) with the rate exceeding 90 cm (36 in) annually in the Fort Sill area (Kawecki and Wyckoff 1984:7).

The mean annual temperature for the Fort Sill area is approximately 16.2° C (61.1° F) with a range of 27.8° C (82.1° F) in July and August to 4.2° C (39.6° F) in January (Crockett 1964:328). There are approximately 220 frost free days annually.

FLORA AND FAUNA

Fort Sill Military Reservation is located within the Mixed Grass Plains of the Southern Plains, a transitional area between the Tall Grass Prairies to the east and the Short Grass Plains to the west. While this area can be considered an ecotone between the tall grass region and the short grass areas, the transition is gradual, with a slow replacement of tall grass plant species by short grass plant species from east to west as available moisture decreases. The tall and mixed grasslands are considered as a unit in some classification schemes (Shelford 1963:329). The entire tall grass/mixed grass region can be described as an ecotone between the eastern forests and the western High Plains, with a mixture of eastern and western influences (Rice and Penfound 1959:605). Within the tall grass and mixed grass regions, the type and mix of faunal species are similar, with a transition to short grass faunal types at the boundary between the high, short grass plains and low, mixed grass plains (Shelford 1963:334-335).

Fort Sill Military Reservation has three basic floral environments: grassland, riparian forest, and upland woodland. The grasslands consist of both mixed grass plains and tall grass prairie. The tall grass prairie is found primarily east of East Cache Creek on soils derived from the Permian Red Beds. This area is dominated by a mixture of grasses typical of a tall grass prairie (Bamforth 1988:32; Kawecki and Wyckoff 1984:3), with little bluestem and big bluestem dominating, while smaller amounts of silver bluestem and switch grass are present (Ferring 1978:76-117).

The grassland areas west of East Cache Creek are primarily mixed grasses types on soils derived in part from sediments from the Wichita Mountains. Little bluestem is still the dominant grass variety, but little or no big bluestem is present, and mid-grass and short grass species, such as dropseed and hairy grama grass, occur in greater numbers (Baugh 1984:16-18; Ferring 1978:76-117). Before European settlement of the region, these grasslands would have supported herds of bison, low numbers of antelope, lesser prairie chicken, and jackrabbit.

The riparian forests in the study area support a floral community similar to that recorded for bottomland forests in tall grass prairie/mixed grass plains of north-central Oklahoma (Rice 1965). On the reservation, American elm is dominant in seven of 10 stream channels surveyed by the Museum of the Great Plains (Ferring 1978:82-104) as compared to 38 of 47 bottomland forest stands surveyed in north-central Oklahoma (Rice 1965:710). Nettleleaf hackberry is the dominant species on East Cache Creek, but is possibly a recent invader on the disturbed floodplain (Rice and Penfound 1959:597). Bur oak dominates on Ketch Creek and occurs as a codominant on Medicine and Sitting Bear creeks, and Shumard's oak is the dominant woody species on Beef Creek. Neither bur oak nor Shumard's oak dominate in any of the stands studied in north-central Oklahoma, and neither species was recorded in the Wichita Mountains Wildlife Refuge (Buck 1964); their dominance on these two stream floodplains may be a historic phenomenon.

Economically important species present on the floodplains as subdominants or lower quantities include pecan, black walnut, western hackberry, common persimmon, and red cedar. With the exception of two species of oak, the riparian forests within the study area are typical of bottomland forests within the tall grass prairie/mixed grass plain region. The undergrowth recorded during the Fort Sill survey and Rice's survey in north-central Oklahoma is similar, with poison ivy/oak, wild rye, and coralberry common and *Smilax* spp., *Vitis* spp., and common elderberry present. Deer and turkey are two important faunal species that inhabit

the riparian environment. Additional species such as opossum, squirrel, and raccoon inhabit the riparian forests, with mussels and fish available from the streams.

The upland woodlands of the study area are essentially a Cross Timbers type vegetation. The western edge of the Cross Timbers region itself is currently located approximately 25 to 30 km east of Fort Sill, with the Wichita Mountains maintaining a western isolate of this upland woodland type. On the basis of studies conducted within the Wichita Mountains Wildlife Refuge (Buck 1964), post oak is the dominant woody species within the refuge with blackjack oak a subdominant. This dominance of post oak over blackjack oak is typical of the mixture seen in the main body of the Cross Timbers, whereas other upland woodlands in western Oklahoma are dominated by blackjack oak (Rice and Penfound 1959:603). On the other hand, the upland woodlands of the Wichita Mountains are similar to other western Oklahoma upland woodlands in that none contain black hickory, an important species in the main body of the Cross Timbers (Wyckoff 1984:8). More pertinent to prehistoric utilization of the region is that the woodlands within the Wichita Mountains are more dense than the woodlands found in surrounding areas (Rice and Penfound 1959:601), offering a greater concentration of resources.

There are three species within the Wichita Mountains that are rare within the mixed grass plains. Sugar maple (Buck 1964:340) and chinquapin oak (Rice and Penfound 1959:599) occur in significant numbers on north facing slopes, and western walnut is present in valleys (Buck 1964:344). Sugar maple in particular is a rare occurrence outside the forests of eastern Oklahoma (Rice and Penfound 1959:606).

The upland woodlands in the Wichita Mountains offer excellent habitat for economically important faunal species, in particular white-tailed deer and wild turkey. White-tailed deer favor forest edges and open woodlands (Schmidly 1983:294), and this type of environment is available in abundance in the Wichita Mountains (Buck 1964). Buck (1964:340) noted the many deer within the refuge and their impact on vegetative understory.

The oaks that are dominant within the Wichita Mountains are an important food source for a variety of animals, with oak twigs and young leaves providing forage for deer and rabbits (Schmidly 1983:297) and acorns providing a large portion of the food consumed by a wide variety of animals including deer, wild turkey, prairie chicken, and squirrels (Petrides 1958:296). Both the acorns and the fauna they attracted would have provided an important food source for aboriginal populations as well.

LITHIC RESOURCES

Chert is unknown in primary outcroppings within Fort Sill Military Reservation. While sedimentary formations known to contain chert occur in the area, no chert sources within these outcroppings have been located (Banks 1990:104). The primary local source of lithic raw material is gravel veneers containing quartzite and chert derived from the Ogallala/Potter formations (Banks 1990:114) and possibly from local sources such as the Meers quartzite. The exact distribution of these gravels within the military reservation, their effect on prehistoric site distribution, and the extent of aboriginal usage of these gravels is unknown. A number of sites have been identified within the study area that appear to be prehistoric lithic procurement sites that were exploited for their deposits of quartzite and chert cobbles (Ferring 1978).

Igneous rocks provided a limited amount of lithic raw material but are poor material for chipped stone tools, though adequate for ground stone tools. Quartz, available as outcrops at the southern edge of the Wichita Mountains (Banks 1990:104-105) and in gravel veneers and stream channels, was often utilized by aboriginal knappers.

SUMMARY

The Wichita Mountains and the surrounding area contain a disparate range and quantity of resources. Some resources, such as faunal and floral species, are available in high quantities, while other items, in particular lithic resources, are extremely limited. Limitations are imposed by the relatively limited water resources (Bastian 1966:3) and low acreage of fertile alluvial soils as well as the limited lithic sources. These are balanced on the other hand by the potentially high population of white-tail deer and other faunal species dependent on the oak forests and woodlands, and high levels of forest products, especially when compared to adjoining western and southern regions. These forest products include sugar maples, which are extremely rare west of the eastern forests of Oklahoma. Floral resources would have been at their greatest potential in the fall (Ferring 1978:29) with faunal resources greatest from fall to mid-winter (Speth and Spielmann 1982).

In the Fort Sill area, floral and faunal resources are similar to those found in areas located to the northeast and east. The Washita and Canadian river valleys would have offered similar resources, along with a more dependable water resource and greater amount of alluvial soils suitable to aboriginal horticultural practices. On the other hand, river valleys to the south and west of the study area have bottomland vegetation less suitable to the maintenance of large populations of small and medium game animals. The Red River valley supports bottomland vegetation similar to the high plains bottomlands, with a dominance of cottonwood and scrub-growth hackberry and limited stands containing elm and pecan (Sellards et al. 1923:130-131). Oak trees and wooded uplands are completely absent, and the grassland contains species more typical of the short grass plains (Sellards et al. 1923:130-153).

The Wichita Mountains may have provided a wide selection of resources that were otherwise unavailable or seasonally scarce to the aboriginal inhabitants of the upper Red River valley and other western regions. There is little evidence that the area was ever intensely occupied by horticultural groups associated with the populations that utilized river valleys to the north and west of the Fort Sill area. However, it is likely that at some time populations from those areas exploited the resources available in the Wichita Mountains area. The regional affiliations of the groups that did utilize the area, particularly in late prehistoric times, are among the subjects that need further work and clarification.

CHAPTER 3

SETTLEMENT IN THE FORT SILL AREA

FROM THE PROTOHISTORIC ERA TO STATEHOOD

by
Steve Gaither

INTRODUCTION

The Great Plains, which divides much of North America and all of the United States north to south, has long been home to a number of Native American groups. During the sixteenth century, the Sioux, Cheyenne, and Arapaho, once agriculturalists, began to depend more on hunting for their subsistence, exploiting the vast herds of bison on the plains. Other groups like the Crow, Kiowa, Comanche, and Blackfoot migrated east to the Great Plains, attracted by the same huge herds. Groups already in the plains area included the Wichita, Caddo, and Waco (Gibson 1980). Southern Great Plains Apachean groups, the most dominant of which was the Lipan, inhabited and probably controlled portions of Oklahoma prior to the early to mid-1700s. That control passed to the Wichita, Comanche, and Kiowa tribes during the latter half of that century (Hofman 1989:91; Webb et al. 1952:1:54-55).

Europeans first visited the Oklahoma region in 1541 when Francisco Vázquez Coronado explored the region for the king of Spain (Morris et al. 1976:16-17). French traders were active in the Oklahoma area by 1700 (Curtz 1981; Morris et al. 1976:Map 13). As the United States severed its ties with Britain, trade with the French in the Oklahoma area, still controlled by France, increased (Curtz 1981; Flores 1985). The region became part of the United States in 1803, acquired as part of the Louisiana Purchase.

Much of the subsequent history of the Oklahoma region in general and the Fort Sill region in particular is of a dual nature—first, Native Americans were forced away from advancing Euro-American peoples, eventually relegated to their own separate lands, collectively called Indian Territory; later, as unsettled lands into which Euro-Americans could move grew more scarce, efforts were made to inculcate and promote Euro-American values and lifestyles among the Native Americans. Part of the motivation behind this latter effort was to influence Native Americans to abandon seminomadic lifestyles and trade the vast tracts of open land they then held in common for cash settlements and much-reduced allotments held in severalty.

Euro-American exploration in the Fort Sill area and efforts to make peace with the Indians living in the southern Great Plains, was a prelude to westward expansion by Euro-Americans and began in 1834 with General Henry Leavenworth's Dragoon Expedition (Nye 1969). By 1837 a trader's post had been established on the west bank of Cache Creek, near the future location of Fort Sill. The post was established after treaties with the Comanche and Kiowa in 1835 and 1837 made it possible for Auguste Pierre Chouteau to expand

his family's trading operations in the Great Plains (Figure 2). They subsequently opened several new posts, one of which may have been located at site 34Cm-132. That post may have been in operation as long as a decade, although it more likely closed in 1838 (Spivey et al. 1977:167-168). Abel Warren set up another trading post in 1839 near the point where Cache Creek drains into the Red River; the post was abandoned by 1846 (Peter and Weston 1993:31). Fort Sill can trace its beginning to a point in time shortly thereafter—in 1852, Captain Randolph B. Marcy recommended Medicine Bluff, near present-day Fort Sill, as a good site for one unit in a line of frontier forts stretching from Fort Gibson into Texas and designed to protect the interests of United States settlers. Fort Sill, first called Camp Wichita, was established for that purpose in 1869 (McReynolds 1954:246).

In 1855, the Choctaw leased part of the land they had been given in trade in 1830 back to the United States government so that the Wichita and other tribal groups could be settled there (Figure 3). After the Civil War, this land was taken from them because they had not supported Union forces. The land was then divided into reservations for various Indian groups—the Cheyenne and Arapaho were placed in the north portion, the Wichita and Caddo in the middle portion, and the Kiowa, Comanche, and Kiowa-Apache in the southern part, the latter portion being the focus of this chapter. According to W. H. Quinette, who operated a store at Fort Sill during the nineteenth century, the Kiowa, Comanche, and Kiowa-Apache reservation was further divided by mutual agreement among the tribal groups residing there—the south half would be occupied by the Comanche, the north half by the Kiowa and the Kiowa-Apache (Quinette 1934:24). The Kiowa, Comanche, and Kiowa-Apache were settled onto this reservation between 1868 and 1874. The Indian agency in charge of the reservation was first established at Fort Cobb, near Anadarko, Oklahoma, then transferred to Fort Sill in 1869, shortly after construction began on the fort (Peter and Weston 1993:32).

HISTORIC-ERA NATIVE AMERICAN OCCUPATION

Settling the Indians onto the lands of the Kiowa, Comanche, and Kiowa-Apache reservation was not an easy task. Raids on settlers and the theft of horses and cattle, especially by the Kiowa and Comanche, continued to be common during the first half of the 1870s (Nye 1969:107) until the Red River War with these two groups ended in 1875, bringing about the surrender of Quanah Parker's band of Quohada Comanche. After three years of imprisonment, the Quohada Comanche returned to the reservation to settle. The Apache also resisted being limited by reservation boundaries, battling against efforts to permanently establish them on reservation lands between 1870 and 1886. The main thrust behind the resistance was dampened when Geronimo surrendered in 1886 (Sonnichsen 1986:9).

By 1887, there were approximately 1,500 Comanche, 1,150 Kiowa, and 240 Kiowa-Apache on the reservation (Pearson 1887). Most of the members of these groups were still living a traditional lifestyle, although the inculcation of Euro-American ideology had begun to effect changes. According to the 1889 report of the Commissioner of Indian Affairs,

[t]he reservation system belongs to a "vanishing state of things" and must soon cease to exist. . . . [All Native American groups] must adjust themselves to their environment, and conform their mode of living substantially to our civilization. This civilization may not be the best possible, but it is the best the Indians can get. They can not escape it, and must either conform to it or be crushed by it [Ashley 1890:3].

Change was made necessary as the bison almost disappeared from the plains in the 1870s (Buntin 1931:37; United States Department of the Interior, Census Office [USCO] 1894:352); by 1887 one Fort Sill resident noted that many of the Kiowa, Comanche, and Kiowa-Apache were "anxious to have a farm" (Pearson

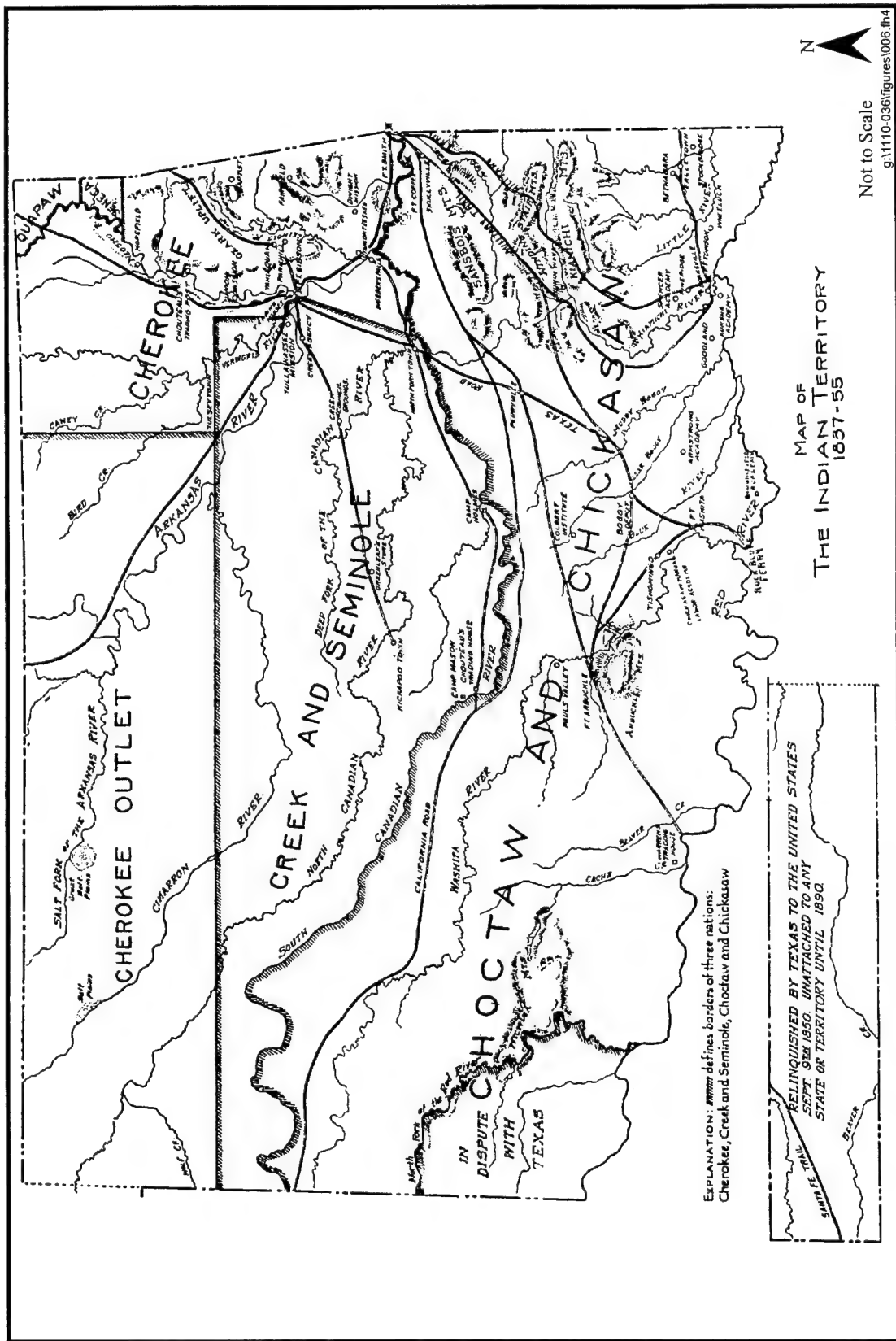


Figure 2. Indian Territory, 1837 to 1855 (after McReynolds 1954).

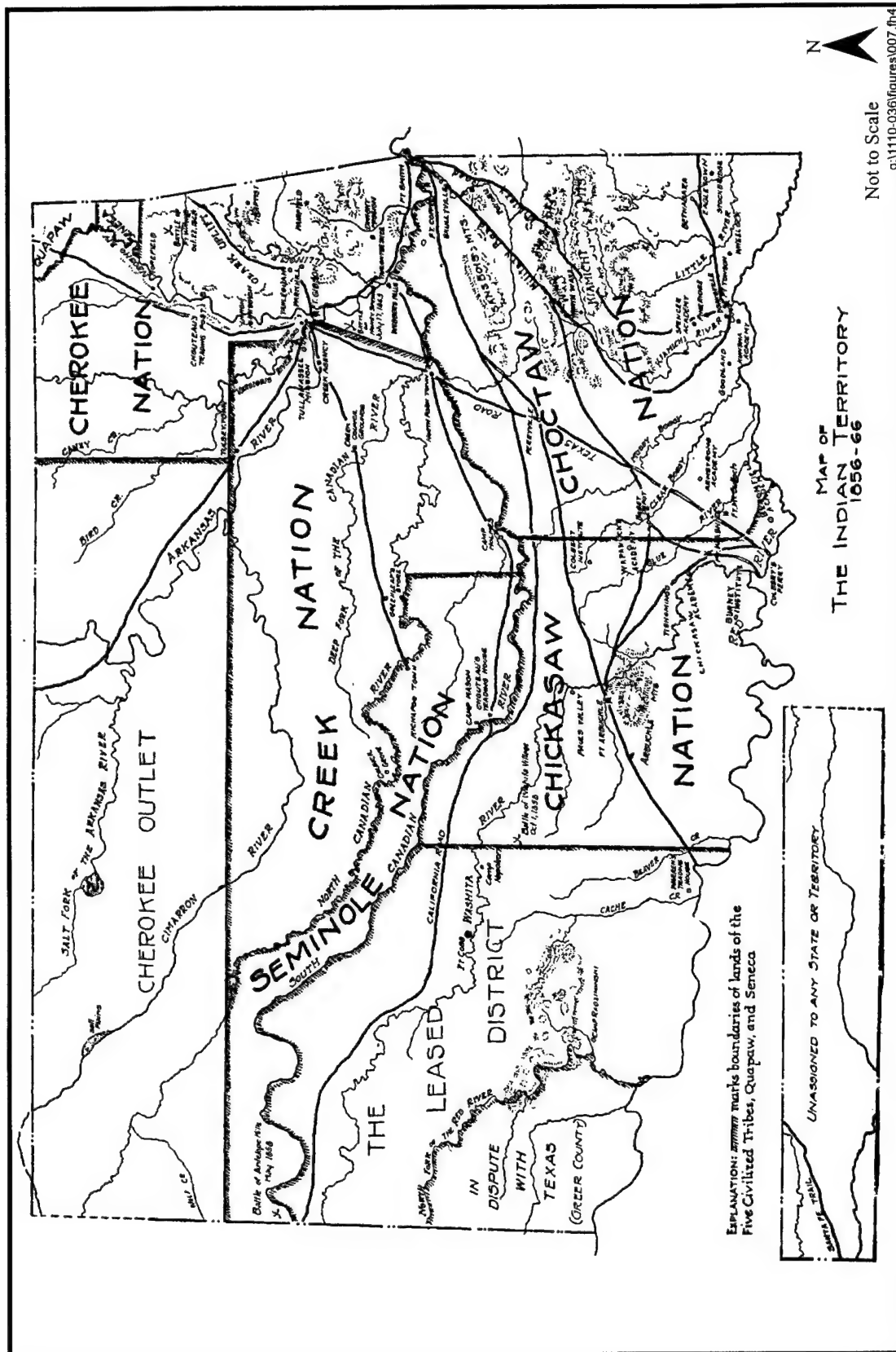


Figure 3. Indian Territory, 1856 to 1866 (after McReynolds 1954).

1887:6). By the 1890s the government was subsidizing the construction of housing for reservation residents who wished to build more permanent homes (Beck 1893:n.p.; Burton 1896:n.p.; Jones 1897:1; Kiowa Agency 1897:n.p.; Kiowa Agency 1898:n.p.; Morris 1938:438). The typical house appears to have been a 14- by 28-foot (4.3- by 8.5-m) dogtrot-style structure (Methvin 1937:287-288). However, these buildings were often used for storage rather than as residences, and there were noted to have been "some good houses where farming implements were stored and a favorite horse installed" (USCO 1894:539).

One town settled almost exclusively by Native Americans was Indianoma, located a short distance southwest of Fort Sill. Begun circa 1894, when the Reverend Henry Kohfeld obtained permission from Quanah Parker to build a mission on Indian lands between Big Sandy and Post Oak creeks south of Elk Mountain, the future town's first settlers were all Comanche and Kiowa citizens. Indianoma's earliest inhabitants included Chebahtah, Kowena, Codopony, Saupitty, Tahmahker, Asenap, and their families; all chose land near the town when they were allotted tracts in severalty in 1900 and 1901. A pre-twentieth-century house built by the government for a Comanche woman named Tsigobah was still standing in Indianoma in 1985, although it was no longer in its original location (Looney and Looney 1985:47). The allotments of 1900 and 1901 are discussed below in more detail.

EARLY EURO-AMERICAN AND AFRICAN-AMERICAN SETTLEMENT

By the mid-nineteenth century, some Euro-Americans with connections to tribal groups, usually men who had married Native American women, were residing in the region that today composes southwestern Oklahoma. With the close of the Civil War in 1865, a greater number of Euro-Americans (and possibly some African-Americans) unrelated to tribal members began drifting into the eastern portion of Indian Territory (Gittinger 1917:176). With the establishment of Fort Sill and the placement of the Native Americans on reservations, still more non-Native Americans began making the area their permanent residence. Construction of Fort Sill began in January 1869, undertaken by the Tenth United States Cavalry and the Sixth United States Infantry, the former being a detachment of African-American troops. Two warehouses, possibly for the storage of Indian rations, were reportedly built on a ridge just north of Quarry Hill (Nye 1969:102). The same year, traders John S. Evans and William Mathewson established stores (Figure 4) just west of Cache Creek, near present-day Rogers Lane (Northcutt et al. 1989:19). Mathewson traded mainly with the Indians, exchanging basic food items for furs; he may have also operated other trading posts at Fort Supply and Anadarko, both in Indian Territory (Spivey et al. 1977:169). Where the earlier efforts of Chouteau and possibly others to establish lasting trading posts in the area failed, the efforts of Evans and Mathewson were more successful not only because of the existence of Fort Sill, but also because of the efforts to limit Native American travel within reservation boundaries (in turn placing limits on their traditional means of acquiring food) and to the disappearance of the Great Plains bison (Looney and Looney 1985:15). Mathewson sold his store to E. D. Smith in 1874, leaving the area possibly because his business had fallen off and he anticipated increased hostilities from the Indians (Spivey et al. 1977:169).

The same year, Lawrie Tatum became the Indian Agent in charge of the Kiowa, Comanche, and Kiowa-Apache Agency and moved his family to the Fort Sill area to take over part of the duties of Colonel W.B. Hazen, Sixth Infantry, who had been "superintendent of the tribes in Indian Territory" (Nye 1969:99). Tatum brought with him others to staff the agency, including teachers, clerks, craftsmen, and a doctor. He also brought several pieces of equipment, including a steam engine with sawmill attachments, a corn grinder, and a shingle maker (Northcutt et al. 1989:19). Tatum's first home was located about 100 yards (91.4 m) east of Mathewson's store and later became known as "Old Adobe" because of the material used in its construction. Other structures were set up in the vicinity of Old Adobe, but the only details known are that they were occupied by persons other than Tatum and the other agency personnel. Tatum moved the agency

two miles (3.2 km) west in 1870, to a location more convenient to Fort Sill; Josiah Butler, the schoolmaster for the Indian children, continued to use Old Adobe until new school buildings were ready in 1871. Thereafter, the structure was used by various persons and apparently continued to be occupied as late as the early twentieth century (Corwin 1958:89; Spivey et al. 1977:169, 171).

The buildings and structures in the vicinity of the agency, sometimes collectively called the Agency Village, constituted "what effectively was the first white town in present Comanche County" (Looney and Looney 1985:15). The agency was moved from Fort Sill to Anadarko in 1879, after which time it was usually referred to as the Kiowa Agency although it was actually the Kiowa, Comanche, and Wichita Agency (Myers 1889:192). Some of the buildings in the Agency Village complex were left vacant for the next several years (Northcutt et al. 1989:23), while others were used by the Fort Sill Sub-Agency of the Kiowa Agency at Anadarko. In 1886, Colonel Richard A. Sneed built a store in this same general area, one-half mile (800 m) west of Cache Creek. The frame structure soon came to be known as the Red Store because of the color Sneed had it painted (Keown 1934:204; Northcutt et al. 1989:19). There also may have been a wood-frame mill near the Red Store, owned and operated by the government to grind corn and flour for Indian rations (Keown 1934:204). Another trading post may have located at the junction of Cache and Whiskey creeks, south of the Red Store (Keown 1934:204).

Euro-American residents in Comanche County but outside the Agency Village area were sparse—or, according to early resident Emsy Keown (née Nason), almost nonexistent. Keown moved to Fort Sill in 1873 or 1874 with her step-father, James Daley, who was in charge of the government coal yard.

For awhile [*sic*] we lived on the Miller farm, which is the first farm over Cache creek [*sic*] on the south side of the road as you come from Lawton over No. 29. . . . The old stage coach line passed by the house during the days we lived there. Our house was the only building from Fort Sill, 30 miles south to the old stage coach stand on Snake Creek. There were no other buildings from the stand until you reached the next stage stand on Red River. . . . Except for the Indians, we had the country to ourselves.

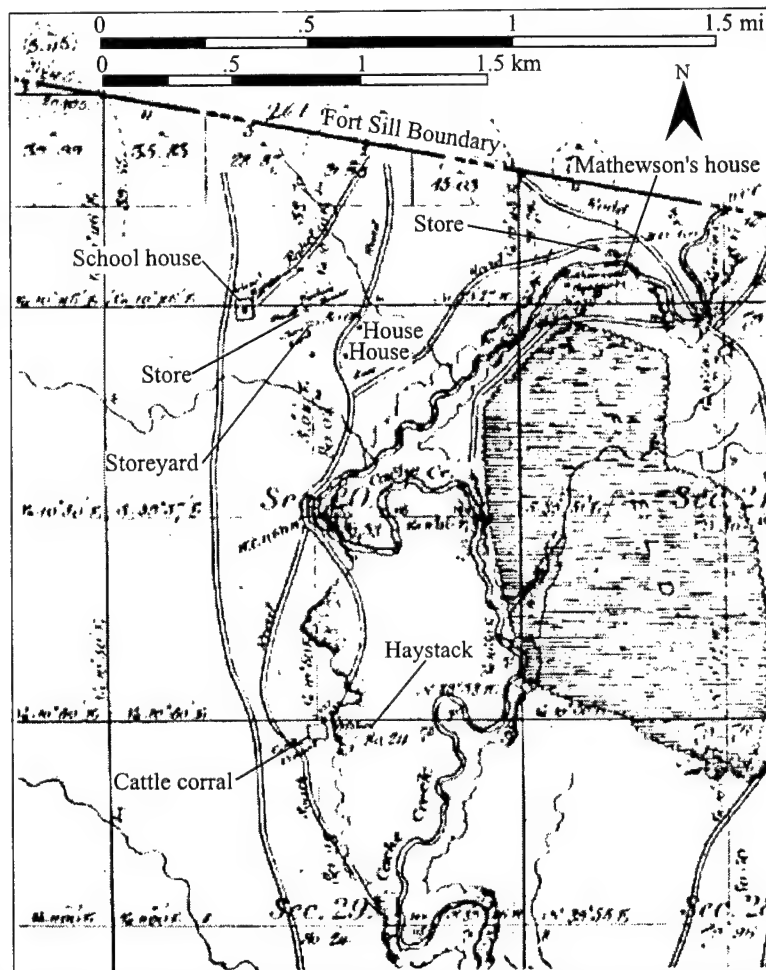


Figure 4. Mathewson's house and store and the Agency Village, 1874 (after United States General Land Office 1874).

Chapter 3: Settlement in the Fort Sill Area from the Protohistoric Era to Statehood

Of course, there were travelers passing by, and too, the cowboys often came to our house to visit [Keown 1934:203].

By 1879 there were still only 5,000 non-Native Americans living permanently in Indian Territory, along with 1,200 temporary residents, most of whom were railroad employees and their families. This figure was only a fraction of what was soon to come during the homesteading of Indian Territory lands by Euro-Americans and at least some African-Americans, a migration at least symbolically begun by Elias C. Boudinot, a Cherokee citizen working as a clerk for the House Committee on Private Land Claims (Gittinger 1917:98). In February 1879, an article signed by Boudinot appeared in the *Chicago Times*, its subject the unoccupied lands in Indian Territory. The article was picked up by newspapers across the United States, and Boudinot responded to inquiries generated by the story with a letter containing information and a map of "unoccupied public land." Areas shown as being in the public domain included those occupied by the Kiowa, Comanche, Apache, Cheyenne, and Arapaho peoples, as well as the region south and west of the North Fork of the Red River, the jurisdiction of which was in dispute with Texas. Notably, this area

included nearly all of the Creek, the Seminole, and the Chickasaw-Choctaw cessions of 1866, but did not include the Cherokee outlet [*sic*]. Boudinot stated explicitly in the accompanying letter that the Cherokees had not ceded any land in the territory to the United States in 1866 [Gittinger 1917:98].

By April there were reports of prospective settlers lining up along the entire Kansas border, and on 6 May 1879 a United States attorney at Topeka stated that a large number of persons desiring homesteads in the as yet closed territory, some of the first of a group that would later be called "Boomers," had crossed the border at Baxter Springs, Kansas, and taken possession of the Quapaw Reservation, in the northeast corner of the territory (Gittinger 1917:102).

He said that there was a continued [*sic*] passage of intruders and much excitement, which seemed to be spreading. A day or two later, reports reached the War Department that miners were going into the Wichita Mountains, in which it was said that gold had been discovered [Gittinger 1917:102].

This first serious border infraction was easily quelled by a simple show of military force, but the Boomers became more adamant in their encroachments as they learned that penalties for doing so were slight to nonexistent due to the laxity of the statutes protecting Indian lands (Gittinger 1917:102, 115). In 1880 there were reportedly about 6,000 non-Native Americans living in the reservations of the Five Civilized Tribes (which included the Cherokee, Creek, Choctaw, Chickasaw, and Seminole nations), indicating about a thousand people may have crossed the border during the preceding year and remained in Indian Territory despite attempts to remove them. One of the most persistent of the trespassers was David L. Payne, who had established a camp of settlers 40 miles (64 km) east of Fort Reno (in Section 14, Township 11 North, Range 3 West) by the spring of 1880 (Gittinger 1917:106-107, 176).

The first legislation opening Indian Territory to homesteading—called the General Allotment Act, or more commonly, the Dawes Severalty Act—was passed in February 1887 (Hagan 1988:61; Kane 1995:17). The Dawes Act allowed the United States president to allot land to the members of any tribe that he felt was "sufficiently advanced to benefit by the change" (McReynolds 1954:297). As originally written, the act did not apply to the Kiowa-Comanche or Wichita-Apache reservations. Legislation opening the region around Fort Sill was not passed until March 1889, when the Springer Amendment gave the president the authority to negotiate for the purchase of Indian lands west of the territory on which the Five Civilized Tribes were located (McReynolds 1954:297). Potential homesteaders favored a quick opening of these lands to settlement, but many Native Americans and Indian agents opposed immediate action (Kane 1995:17). Agent W.D. Myers, serving at the Kiowa, Comanche, and Wichita Agency at Anadarko, wrote in his 1889 report

to the Commissioner of Indian Affairs that Native Americans under his agency “oppose to a man the allotment of their land in severalty, claiming they are not yet ready for the change, and I am firmly impressed with the belief that the time has not yet come when these people should be forced to accept this measure” (Myers 1889:192).

The Springer Amendment provided that each Native American would be allotted approximately 160 acres, and that surplus land would be purchased from the tribes by the federal government and opened for settlement, the details of these purchases to be worked out by a commission appointed by the president (Gibson 1972:104). The commission charged with making the agreements with the separate tribes was chaired by David H. Jerome—thus, usually referred to as the Jerome Commission; the first Jerome Commission agreement was reached in July 1890 (Gibson 1972:104; McReynolds 1954:297-298).

The Jerome Commission did not conclude an agreement with the Kiowa, Comanche, and Kiowa-Apache tribes until October 1892, when it was determined that each tribal member, regardless of age or sex, would receive an allotment of 160 acres, and the remaining land would be purchased by the government at a price of \$1.25 per acre (Nye 1969:303). The conclusion of the agreement was not received with pleasure—there were accusations that tribal representatives were tricked into signing the agreement, that translator Joshua Given (also spelled Givens) had not correctly rendered the words of commission members, and that the agreement was invalid because of these and other problems (Hagan 1993:140; Kane 1995:17; Nye 1969:353; Wallace and Hoebel 1952:350).

Congressional ratification of the agreement with the Kiowa, Comanche, and Kiowa-Apache was delayed for nearly a decade due to the efforts of Captain Hugh L. Scott (stationed at Fort Sill), Quanah Parker, and a few other prominent individuals who felt the agreement came too soon to be in the best interests of the Indians or had been reached unfairly (Nye 1969:304). Their efforts were aided by powerful ranchers who did not want to lose their profitable grazing leases and who “evident[ly] . . . had friends in Congress” (Estill 1931:366; Hagan 1974:92; Kane 1995:17). Wichita Indian Agent James F. Randlett argued as well that opening the area was of little practical value since the reservation land was not very suitable to farming (Randlett 1899:261). However, opposing these efforts were those of the would-be Indian Territory homesteader or business owner and the railroad companies, which had “a major stake in having the area opened to white settlement” (Hagan 1993:97). The latter forces eventually won the fight; the agreement was ratified in June 1900 (Nye 1969:304).

Meanwhile, the first Oklahoma lands were opened, by run, to homesteaders in 1889. The region first opened was in the central portion of present-day Oklahoma and included the area surrounding Kingfisher, Guthrie, El Reno, Norman, Stillwater, and Oklahoma City (Figure 5). To obtain final title to the land, settlers had to comply with three requirements—they had to pay a small fee for the formal entry of the claim with the land office, they had to live on the property for five years, and finally they had to make improvements to the property during the initial five-year residency. The residency period could be reduced to 14 months provided the settler paid \$1.25 per acre, recompense to the government for its purchase of the property (McReynolds 1954:289; Northcutt et al. 1989:19). Estimates of the number of people participating in this first run for Oklahoma property vary greatly. Brigadier General Wesley Merritt, who commanded troops stationed in the newly opened area, estimated the homesteaders at 10,000 to 12,000, but his figures were likely far too low—“Probably, Guthrie and Oklahoma City each contained as many settlers as the General’s estimate for the total” (McReynolds 1954:290-291). Almost a thousand of the participants in the run were of African-American heritage; a good number came heeding the call of southern Black leaders who hoped to establish an all-Black state in Indian Territory. Many successfully located on homesteads east of Guthrie, and the town of Langston was established solely by such African-American pioneers (Gibson 1972:101). By 1890

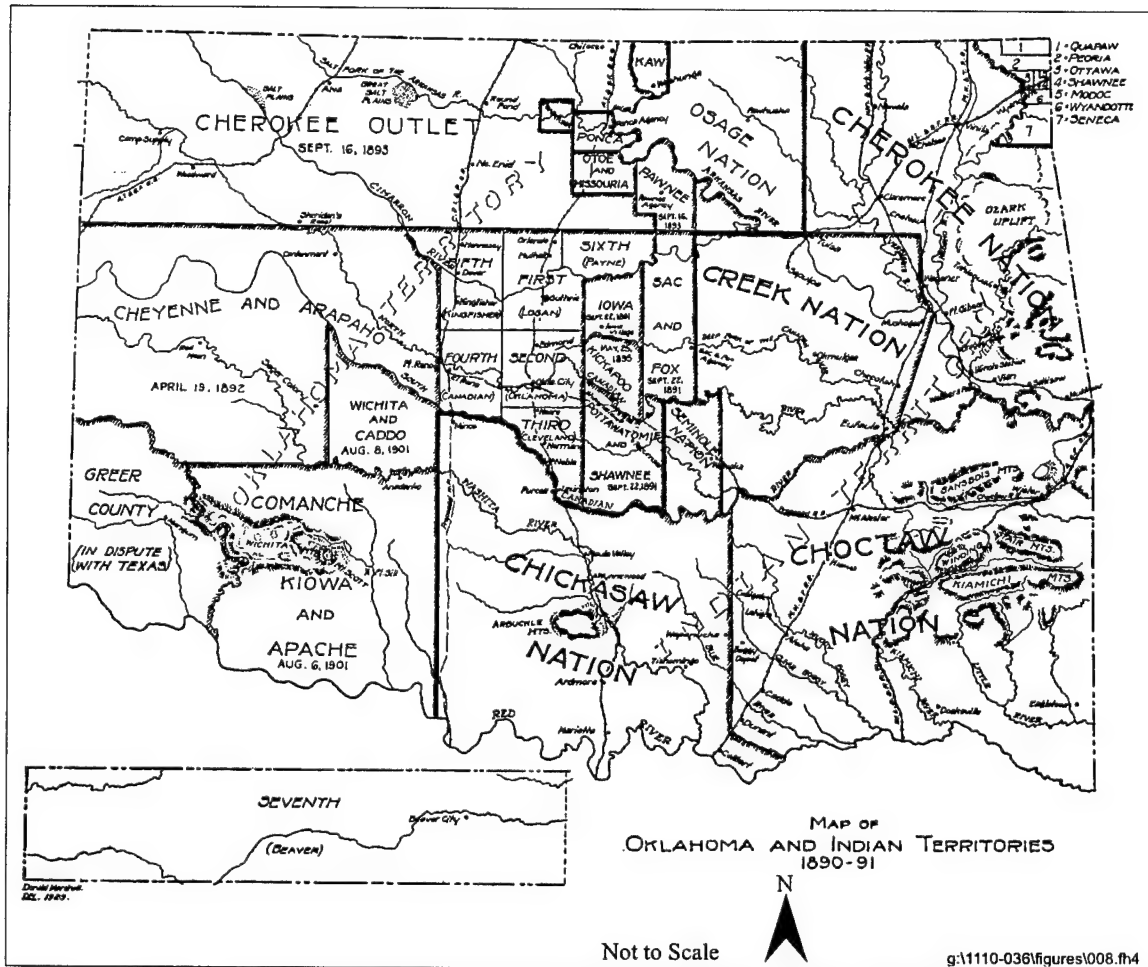


Figure 5. Oklahoma and Indian territories and the dates the various areas were opened to settlement (after Thoburn and Wright 1929).

the non-Native American population of the territory stood at 60,417 (McReynolds 1954:293), approximately 10 times that of 1880.

Oklahoma Territory was created from Indian Territory by the Organic Act in May 1890 (Thoburn and Wright 1929:926), dividing the area that is today Oklahoma roughly in half. The eastern portion, composed mainly of lands awarded by treaty to the Five Civilized Tribes, continued to be known as Indian Territory, while the western portion became Oklahoma Territory, or Oklahoma District. The act established seven counties in Oklahoma Territory, initially known only as numbers rather than names (McReynolds 1954:292). Six covered the area opened in 1889, and the seventh encompassed all of the Panhandle (see Figure 4).

In late 1891, the second run for land in Oklahoma Territory took place in an area just east of the six counties opened in 1889 (see Figure 5). About 20,000 persons participated in the race for homesteads among the million acres opened, approximately three times the number of quarter sections available. Experiments of opening townsites by run were conducted at Tecumseh and Chandler, the results being great confusion and at least one death (McReynolds 1954:298). The third run, for the opening of the Cheyenne and Arapaho

lands (see Figure 5) took place in April 1892 and involved about 25,000 persons. In contrast to the previous openings, there were more claims available than homesteaders seeking them (McReynolds 1954:299). What may have been the most spectacular run during the opening of Oklahoma lands took place in September of the following year, when the Cherokee Outlet (see Figure 5) and the lands of the Tonkawa and Pawnee were made available by run to homesteaders. Approximately 40,000 claims were available; approximately 100,000 prospective settlers vied for the tracts (McReynolds 1954:301). The fifth run was held in May 1895, when the approximately 200,000 acres of the Kickapoo Reservation, less a significant percentage of allotments and school land reservations, were opened to settlement (McReynolds 1954:301).

In March 1893 Congress set up the Dawes Commission, headed by Massachusetts Senator Henry L. Dawes, and charged it with negotiating agreements under which the Five Civilized Tribes would surrender their lands in exchange for allotments in severalty. As with the previous work of the Jerome Commission, it was "the duty of the commissioners to prepare the Indians for citizenship and their territory for statehood. In effect, the Indians were to exchange their tribal citizenship for United States citizenship" (McReynolds 1954:310). The news that the Dawes Commission was negotiating for the Indian Territory lands encouraged illegal intrusion by non-Native Americans. That segment of the population had grown to 250,000 by 1894, and a year later Native Americans were outnumbered four to one among a total population of 350,000 (McReynolds 1954:311). The work of the Dawes Commission was slow because the tribes refused to negotiate. The United States government forced acquiescence in June 1898 by abolishing all tribal courts and authorizing the commission to make allotments (McReynolds 1954:311; Thoburn and Wright 1929:615-616).

A greater number of settlers began immigrating to areas closer to Fort Sill during the early 1890s. The town of Cache is one community that can trace its beginnings to this period. The John T. Rusler family moved from Navajo, Greer County (then claimed by Texas), to a two-room log house owned by a Comanche named Black Horse, situated on land just northwest of the current location of the town. Rusler helped build Quanah Parker's house, south of Quanah Mountain (Looney and Looney 1985:43). Early rancher Emmet Cox settled several miles southeast of Rusler. His ranch headquarters, possibly built prior to 1890, was located on the west bank of Cache Creek west of the present-day town of Walters (Sneed 1934:218), about 10 miles (16 km) south of Fort Sill. Cox leased a large tract of pasture land within the reservation, the acquisition of the lease perhaps aided by his marriage to an Indian woman. J. E. Hewitt, who moved into Old Adobe in 1891, worked for Cox and partners John Quarles and Frank Houston as a sheep herder in the 1890s (Hewitt 1934:95; Sneed 1934:218). Hewitt also worked at the Circle Ranch, located about five and one-half miles (8.8 km) southeast of where Lawton would eventually be located. He, his wife, and their son lived in a dugout near the ranch house, where owners Mr. and Mrs. Stine lived (Hewitt, Mrs. J. E. 1934:128).

The population of the area surrounding the stores and subagency buildings just south of Fort Sill grew to about 50 during the latter half of the 1890s (Maddux 1934:33). The population included not only those of Anglo descent but of Hispanic origin as well—"I remember . . . an old Mexican who lived on the creek below our house. He had quite a pretentious camp—several tents connected by arbors. There were usually several Mexicans there with him (probably political refugees) . . ." (Maddux 1934:34). Prospectors were also "digging and poking and prodding into the rocks and soil of the Wichitas" throughout the 1890s (Looney and Looney 1985:50).

THE 1901 OPENING OF THE KIOWA, COMANCHE, AND KIOWA-APACHE RESERVATION

The Commissioner [Richards, of the United States Land Office] walked to the front of the platform, raised his hand for order and in a loud voice exclaimed, "Stephen A. Holcomb, Pauls Valley, Indian

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Territory, draws the first number." The crowd yelled for three minutes, as much delighted as if everyone had drawn a prize [Estill 1931:375].

As discussed in the preceding section, allotment of lands to the Kiowa, Comanche, and Kiowa-Apache in 1900 and 1901 came about as a result of the Jerome Commission agreement of 1892 (Wallace and Hoebel 1952:351). The Indians protested that the agreement was fraudulent (Nye 1969:303-304), and several individuals, including Captain H. L. Scott, helped block Congressional ratification of the agreement for several years. However, in June of 1900 the agreement was ratified. The presidential proclamation of 4 July 1901 divided the Kiowa, Comanche, and Kiowa-Apache land into tracts of 160 acres each, to be assigned by lottery after the Indian inhabitants had chosen their allotments, also containing 160 acres each (Kane 1995:24).

In most cases the Kiowa, Comanche, and Kiowa-Apache chose their own tracts. Parents chose allotments for children under the age of 18, and the Commissioner of Indian Affairs made selections for orphans and those unwilling to choose land themselves (Dale and Rader 1930:541-542). Eighteen Euro-Americans married to Native Americans were also given allotments, as were five "friends of said Indians, who have rendered to said Indians valuable services" (Dale and Rader 1930:543). In at least one instance, traditional Comanche law was used to determine which of two persons claiming the same allotment would be allowed possession of a claim. Decided by Quanah Parker, the disputed allotment appears to have been awarded to the man thought to be the braver warrior (Hoebel 1940:55; Kane 1995:24; Wallace and Hoebel 1952:341-342).

In general, the Comanche chose lands south of the Wichita Mountains, and the Kiowa and Kiowa-Apache chose lands north of the mountains, the same areas each group had chosen when they first were placed on the reservation. Indian agent Randlett noted that many of the allottees selected tracts that included lands they had already "crudely improved, and upon which the Government had assisted them in the construction of comfortable two, three, and in few instances, four room houses—houses that would be classed comfortable for homes of whites who have entered upon the surplus lands for establishing homesteads" (Randlett 1902:320). During the latter half of 1899 and the first half of 1900, over 100 such houses were constructed, "and in every case the Indian to whom lumber was furnished for the purpose asserted that the location he had chosen for his house was where he would elect to have his allotment" (Randlett 1900:332). About 50 more were probably constructed during the fall of 1900 (Randlett 1900:332), 75 more were constructed during the year preceding June 1902, and 90 more were at that time being planned (Randlett 1902:321).

About 3,500 Native Americans received allotments out of the 2,300,000 square miles (595,700,000 ha) of the Kiowa, Comanche, and Kiowa-Apache lands. Several portions of the region were then reserved from settlement. Fort Sill was expanded to encompass 56,000 acres; a forest reserve in the Wichita Mountains was set aside; sections 13, 16, 33, and 36 in each township were reserved for educational purposes and the construction of public buildings; and approximately 480,000 acres were reserved for Indian grazing land. After these reservations, some 2,080,000 acres were available for settlement by potential homesteaders (Estill 1931:366-367; McReynolds 1954:304).

In contrast to the previous openings in Oklahoma Territory, claims in the Kiowa, Comanche, and Kiowa-Apache lands (as well as those of the Wichita and Caddo, opening at the same time) would be chosen not by run but by lottery. Denis T. Flynn, the territory's first delegate to Congress (Thoburn and Wright 1929:574), had introduced a bill aimed at reducing the disorder that ruled during previous openings. Awarding land by lottery also eliminated the "Sooners," persons who would sneak across a border prior to the official beginning of a run and establish claims on property unfairly. These two regions were the first to be opened by lottery. The Secretary of the Interior divided the area into north and south districts and set

up land offices in each, the northern office at El Reno, the southern at Fort Sill. Each person who wished to participate in the lottery had to register at one of these offices, stating when he or she registered in which district they wished to try to draw the right to choose a claim; any persons who registered for both districts forfeited their right to take part in the lottery (Estill 1931:367-368; Gittinger 1917:173; McReynolds 1954:304).

During the weeks leading up to the registration period, which began 10 July and ran through 26 July, people who wanted to participate in the drawing moved toward El Reno and Fort Sill, while cattlemen began shifting their herds to the Big Pasture (on the south side of the reservation) or to the Wichita Forest Reserve—they were to remove all fences and cattle from the lands being opened by the beginning of registration (Haley 1940:53-54; Kane 1995:25). J. E. Hewitt and his wife left the headquarters of the Circle Ranch, where Mr. Hewitt had been working, and moved north to join the registrants near Fort Sill, nearly all of which were camped along Cache Creek in an area known variously as Tent City, Ragtown, Boomer City, Sooner City, and Cotton (Hewitt, Mrs. J. E. 1934:128). The population of the camp at times surpassed 10,000 (Haley 1940:57).

The people were camped for a mile or two up and down the valley, and in every direction we could see hundreds of campfires twinkling like giant fire-flies. All night long people kept coming in, wagon load after wagon load, and camped at various places in the valley. The crowd was rather quiet, but occasionally a shot would be heard somewhere up or down the creek, or a loud whoop as some exuberant home seeker strove to impress upon his neighbors [*sic*] the fact that he was still there, yet there was but little shooting and comparatively little noise or disorder of any sort. Some of the “eighty-niners of Old Oklahoma” were evidently present, for the old yell of “O-o-o-h J-o-o-e, H-e-e-a-h’s yo M-u-l-e!” was often heard. From time to time a khaki-clad trooper rode by on his regular “beat” but there was but little work for the soldiers to do [Aldrich and Peterson 1970:303].

To register, settlers had to first present an affidavit stating that they were either over 21 years of age or head of a family and that he or she did not own more than 160 acres of land in any other state. Once agents at the land office were satisfied of these claims, the registrant filled out a card, supplying various personal information, then was issued a registration receipt that allowed inspection of the lands being opened (Estill 1931:368). To alleviate the necessity of registrants spending days at a time in long lines, Army officials organized the settlers into companies of 100 persons each, which were then registered in numerical order. Since approximately the same number of companies registered each day, registrants knew about when to appear at the registration booths and could avoid spending several days waiting in line (Aldrich and Peterson 1970:302-303; Estill 1931:370; Kane 1995:25). Although registration was simple and seems to have run quite smoothly, locating quarter sections was difficult, and those already familiar with the country “were able to do a good business in helping others to get located” (Haley 1940:61).

An estimated 7,000 people were congregated near Fort Sill by the evening of 11 July; 31,015 people registered during the first five days (Estill 1931:370-371). It had been estimated that up to 50,000 persons might register at the two land offices, but two days before the close of registration more than triple that amount had already filed for land in the two districts. By that day, 24 July, 126,535 people had registered at El Reno and 29,888 had registered at Fort Sill. The grand total registered when the booths closed on the 26th was 165,000 (Estill 1931:372-373).

The lottery for both districts took place at El Reno between 29 July and 1 August (Haley 1940:54, 64), on a raised 32-foot (2.9-m) square platform set up north of the Irving school grounds; tents and booths were scattered nearby, giving the lottery the aura of a country fair. The first day of the drawing, all the envelopes containing the names of the registrants, color coded according to district, were delivered to the platform and

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placed in two boxes, each 10 feet (3 m) long and 2.5 feet (.75 m) square. One box held the El Reno district registrants, the other the registrants for Fort Sill district land. Along the length of each box were five doors, beside which five boys too young to take part in the lottery were stationed to withdraw envelopes. After each box was rotated, 25 envelopes were withdrawn, five from each station, then the drawing moved to the adjacent box. The process was repeated until all the names were withdrawn (Estill 1931:373-375). Although the number of registrants was far in excess of the approximately 13,000 claims (6,500 in each district) up for selection, all the names were withdrawn in order to "impress on the public the fairness and honesty of the drawing" (Estill 1931:377).

When the Secretary of the Interior divided the lands to be opened into two districts, he also delimited three new counties and established county seats in each; thus Lawton¹ was established, along with Hobart and Anadarko (Estill 1931:380; Gittinger 1917:173). Applications for other towns were also examined by the land offices, which agreed that towns should be established at the present locations of Bridgeport and Fort Cobb (Haley 1940:64). As stipulated in the laws covering the opening of the reservation, town lots were sold by auction, the proceeds going toward the construction of bridges, roads, and the county courthouse. No one person was allowed to purchase more than one business and one residential lot. Blocks were to be 324 feet (99 m) wide by 420 feet (128 m) long and each town could include no more than 320 acres. The auction of the county seat lots began 6 August at Lawton, Hobart, and Anadarko—although Lawton was many miles from railroad connections, the future town south of Fort Sill drew the greatest crowds and its lots brought the largest receipts: \$414,845, compared to \$188,595 at Hobart and \$132,593 at Anadarko (Estill 1931:379-380).

Lottery winners could file on their claims between 6 August and 5 October (Haley 1940:54). Winners had to file consecutively according to the number assigned them when their card was drawn in the lottery. Those holding numbers one through 125 were to register the first day, with blocks of 125 persons registering each day thereafter (Estill 1931:377). In general, land near the county seats was chosen first, and property near other townsites was chosen second. As previously mentioned, locating tracts was not easy. Section and quarter section line markers were difficult to find and difficult for the inexperienced "surveyor" to decipher; that the region was peppered with reserved lands and Indian allotments made location and selection of claims even more exhausting (Haley 1940:70).

Some who drew claims filed without knowing a thing about what they were filing on. Some tried to locate the lands themselves while others trusted to locators, often to their disgust. Usually a stranger had to secure the aid of a locator before he could make a selection [Haley 1940:71].

During the 60 days entries were accepted, a total of 11,638 claims was filed at El Reno and Lawton². At El Reno, 757 winners failed to file claims; at Lawton, the figure was 605 (Estill 1931:378). Lands on which claims were not filed were opened under the standard homestead laws at midnight, 4 October, and the small run for those lands occurred that night (Haley 1940:74). Hopeful settlers in the area who failed to draw a winning number in the lottery, of which there were over 3,000, "could lease choice Indian lands, the only stipulation for the first two years being that the land must be cultivated and a house erected. The lessees had no trouble in getting a continuance at one dollar and fifty cents an acre annual rental. In most instances Indians only retained twenty acres and rented the balance" (Estill 1931:379).

¹ Lawton was named after Major General Henry W. Lawton (Nye 1969:305).

² "Of this number 518 were soldiers' declaratory statements, and 770 were the entries of women" (Haley 1940:74).

Towns experienced quick growth in the days following the opening. One early Lawton visitor exclaimed his amazement at the quick growth of that town.

When we reached the crest of the ridge west of Lawton, and caught our first glimpse of the new city, I was fairly struck breathless with astonishment. Lawton was a city of tents. . . . People were continually coming in and others leaving, so that had a census been taken one week, it might have been very much out of date by the next. It seems to me, however, that perhaps twenty thousand might be a very conservative estimate of the population at most times. . . . These people all lived in tents. There were just two buildings in Lawton; the Land Office, a long, low, wooden structure, and the "First National Bank," a plain box shack, about sixteen by twenty feet in size [Aldrich and Peterson 1970:305-306].

This person's estimate of the population was probably somewhat exaggerated. The territorial census taken shortly after opening showed approximately 4,500 persons in the town at that time (Gittinger 1917:173-174). Another early settler named J. G. Kennedy brought his family to the small community of Sterling, a few miles east of Fort Sill, in December 1901. Sterling, which had for a short while been called Hamlin, already had "a wagon yard, a small bakery, a few small store buildings, a saloon owned by Bowen & Brady and a drug store owned by a Mrs. Rogers" (Looney and Looney 1985:53). Rumors of valuable mineral deposits in the Wichita Mountains sparked renewed interest in settlement and mining efforts there (Haley 1940:63). One writer for the *New York Times* estimated the combined population of the mining communities in the area at about that time at 20,000. Mining camps and towns of the era included Golden Pass, Poverty Gulch, Wildman, Meers, Hollis, Doris, Oreana, Homestead, Post Oak Gulch, Lightning Gulch, and Craterville. Speculation in the area was quelled for the most part after October 1903, when H. Foster Bain, working for the University of Oklahoma and the United States Geological Survey (USGS), conducted a government survey to assess the wealth of the Wichitas. "His report, coupled with an all-too-often unfruitful search for wealth, crumbled the base for the mining industry" (Looney and Looney 1985:50-53).

By the close of 1901 about half the area formerly known as Indian Territory had been opened to homesteading, and that opened portion included nearly all of Oklahoma Territory (see Figure 5). From 61,000 in 1890, the population of the territory had quickly increased—to 400,000 in 1900 and 540,000 in 1902. The regions still remaining closed to non-Native American settlers included the reservations of the Osage, Kaw, Ponca, and Otoe-Missouri (see Figure 5). The diminished Indian Territory also remained officially closed to non-Native American settlement, although its population grew from 197,000 in 1890 to 390,000 by 1900 (Gittinger 1917:174; McReynolds 1954:307).

The homesteaders, whether they came with the run of 1889 or the lottery of 1901, immediately began improving their property. Historian Roy Gittinger (1917:157) noted that portable houses were brought in and set up the first afternoon of the 1889 run, and that buildings were erected in early towns like Guthrie and Oklahoma City as soon as building materials could be acquired. The same was likely true for each successive opening.

The types of buildings constructed in this frontier area were largely determined by the environment and natural resources available, just as these factors had determined construction methods in other frontier settlement areas. Tents and canvas-covered wagon beds served as the first temporary shelters for many settlers. These were replaced by log cabins if adequate timber supplies were available, but in the grasslands that composed the majority of the Kiowa, Comanche, and Kiowa-Apache reservation, where timber was difficult to find, settlers constructed sod houses and dugouts (Gibson 1972:106-107). The sod house was the more common of the two in the Oklahoma prairies, where the grama and buffalo grasses formed a thick sod well-suited for construction. Much of the raw material for these houses was obtained by cutting blocks or

strips of sod from the ground and stacking them to form walls, much like stacking bricks in staggered rows. In areas where the soil was heavily interlaced with roots such sod houses could be built completely above ground. If less sod were available or if it were of lesser quality, half dugouts with sod walls may have been constructed (Gibson 1972:9, 107; Morgan and Morgan 1977:64). Dugouts, whether they employed walls partially of sod or were completely constructed of earth, were noted to have been cool in summer and warm in winter. Walls were occasionally covered with newspapers, but floors were usually bare packed earth. These methods of construction—resulting in cheap, simple, utilitarian residences—were well-suited to pioneer needs. However, there were drawbacks. Fleas, mosquitoes, and bed bugs found a welcome home on earthen floors and in clothes and bedding crowded into these small quarters, and rodent tunnels channeled rainwater into the dugouts (Morgan and Morgan 1977:64-65). Although both sod houses and dugouts addressed the problem of a lack of timber for construction in the open plains, they did not alleviate the problem completely. Some wood was almost always necessary, especially for ridge poles and corner posts, and settlers often had to travel many miles to find a suitable supply of cottonwood or hackberry trees (Morgan and Morgan 1977:64).

Another type of structure built in some areas was the picket-wall house. To build these structures, cedar posts were stood vertically rather than stacked horizontally, as was done to construct the more common log homes (Gibson 1972:107). Schoolhouses were also quickly erected by the new residents, even though it was some time before taxes were raised to support such efforts. Most of the children attended single-room subscription schools, and each student's family paid a portion of the cost of operation. Early schoolhouses were constructed using the same methods the settlers used to build their own homes, the labor donated by the local citizenry (Gibson 1972:107, 204).

Life in the opened areas during the years prior to Oklahoma's admission as a state has been described as being "characterized by simplicity, hard work, rapid changes in population, the building of towns, the development of farms, and the establishment of new industries. The people reared families, earned their livings, started schools, showed a normal interest in cultural progress, and were extremely optimistic as to the future of their section of the country" (McReynolds 1954:305). By 1906, the homesteaders had "changed the prairie-plains wilderness into tidy farms and bustling towns" (Gibson 1972:106). Money was scarce, so barter was the more common means of exchange. Butter and eggs were commonly traded for refined products such as salt, sugar, and coffee. For a horse or cow, a year's supply of flour could be had. As in other Great Plains areas, buffalo bones were gathered and sold to fertilizer companies, bringing about seven dollars a ton (Gibson 1972:106). Cooking methods also reflected adaption to the environment. Makeshift stoves were stoked with "prairie coal" (dried buffalo dung), corn cobs, sunflower stalks, or twisted strands of hay (Morgan and Morgan 1977:65).

As the population of Oklahoma and Indian territories increased, its citizens began advocating for statehood, but there was disagreement as to whether the two territories should be admitted into the United States as one or two states. One of the early advocates of a single state was Oklahoma Territory governor William C. Renfrow, who held office from 1893 to 1897. However, admission as a single state required that the status of the Five Civilized Tribes be first determined, a decision that still appeared to be years away. Oklahoma Territory residents anxious for statehood opposed Renfrow's position and the wait it entailed. Nearly all persons in Indian Territory, both Native and non-Native alike, desired admission as a separate state (McReynolds 1954:309-310).

In August 1905 a convention was held at Muskogee, Indian Territory, to discuss admission of the east portion of present-day Oklahoma as a separate state. The principal chiefs of the Cherokee, Choctaw, Seminole, and Creek were in attendance, as well as representatives of the Chickasaw tribe and the non-Native Americans. A constitution for the proposed state of Sequoyah was completed by September, then accepted by the people

of Indian Territory in a November election. However, bills to admit the state were tabled while others fought for the admission of Indian Territory and Oklahoma Territory as a single state (McReynolds 1954:313-314). The forces advocating unification of what had come to be known as the Twin Territories won out in the end; in June 1906, President Theodore Roosevelt signed the Enabling Act, joining the Twin Territories into a single state.

The creation of the state of Oklahoma was officially announced in November 1907, when President Roosevelt "proclaimed Oklahoma the forth-sixth state, 'on equal footing with the original states'" (McReynolds 1954:317). By that time the population of the area, formerly known as the Oklahoma Territory, had increased to 722,441, and that of the Indian Territory region to 691,736, giving a combined total of nearly 1.5 million. The number of residents had surpassed the 1.5 million mark by the time the enumerations for the 1910 census were taken (McReynolds 1954:307, 314; Northcutt et al. 1989:19).

CHAPTER 4

RESEARCH OBJECTIVES AND METHODOLOGY

by
Floyd B. Largent, Jr.

RESEARCH OBJECTIVES

The Coring Program

The coring program was undertaken at the proposed vehicle-wash facility for two primary reasons: (1) to prospect for deeply buried archeological sites within the active East Cache Creek floodplain, and (2) to undertake limited geoarcheological investigations to determine the need for additional subsurface investigations, as well as to understand better the formation processes in this region, and to compare the data collected to that of similar assessments conducted nearby. The methods used to accomplish these goals are detailed later in this chapter.

The Archeological Site Testing Program

The test excavations were conducted to clarify the NRHP status for each of the 15 archeological sites, all of which had been previously recommended as being of unknown eligibility for inclusion in the NRHP. The 15 sites include 34Cm-42, 34Cm-58, 34Cm-107, 34Cm-235, 34Cm-239, 34Cm-315, 34Cm-401, 34Cm-405, 34Cm-407, 34Cm-414, 34Cm-418, 34Cm-425, 34Cm-428, 34Cm-476, and 34Cm-488. Each was evaluated based on the criteria presented in 36 CFR 60.4 [a-d], which provides the guidelines used to determine a site's eligibility for inclusion in the NRHP. These four criteria are applied following the identification of relevant historic themes or patterns. Briefly, a cultural resource may possess significance for:

- (a) its association with events that have made a significant contribution to the broad patterns of history;
- (b) its association with the lives of persons significant in our past;
- (c) its illustration of a type, period, or method of construction, or for its aesthetic values, or its representation of the work of a master, or if it represents a significant and distinguishable entity whose components may lack individual distinction; and
- (d) if it has yielded, or may be likely to yield, information important in prehistory or history.

CORING METHODOLOGY

The geologic studies that were conducted in the 20-ac study area from October 22-31, 1995, were oriented toward examining the near-surface sediments to determine their types, their relationships to one another, their environments and methods of deposition, and their relative ages. The goal was to be able to gain an understanding of the formation of the alluvial and fluvial deposits and topography in this portion of the East Cache Creek floodplain, as well as to determine the possibility of deeply buried archeological remains.

In order to accomplish these goals, an industrial Giddings soil coring/drilling rig was used to capture core samples of the subsurface strata. Twenty-five core holes were excavated across the project area in five main transects, angled from the northeast to the southwest at a bearing of 240°. Most of the core holes were spaced 50 m apart, although this pattern was varied in order to avoid obstacles.

The probe itself consisted of a large, hollow auger approximately 20 cm (8 in) in diameter with a bore of approximately 15 cm (6 in). Within this bore fitted a hollow bore barrel, consisting of two semicylindrical segments attached with a threaded end-cap to form a hollow tube 152 cm (5 ft) long, with an inner diameter of some 10 cm (4 in). During the coring process, the auger was bored into the ground with the bore barrel in place. After drilling approximately five feet (i.e., 153 cm) into the ground, the bore barrel, which was now filled with a core sample of the sediments through which the auger had passed, was removed. Another barrel was placed within the bore, and the drilling proceeded downward another five feet. This process was repeated until the desired depth of 9.15 m (30 ft) had been reached, or until it was no longer feasible to go deeper (in many cases, the bore barrel filled with saturated, flowing sandy material, which precluded material being brought up from deeper levels).

Every core sample was examined while still within the bore barrel; each sediment was described, and the depth and thickness of each zone was measured. The color of each zone was determined in the field using fresh sediment samples and Munsell soil color charts (Appendix A). After examination, the looser sediments were screened through 6.35 mm (¼ in) mesh, and the more compacted, clayier sediments were carefully chopped through with a trowel. Although 25 core holes were excavated in this fashion, no cultural materials were recovered, and in only two cases were buried soils identified. Extremely weathered bedrock was encountered in six core holes, and in one case (CH 23) the auger actually proceeded 40-80 cm into solid sandstone.

TESTING METHODOLOGY

Remote Sensing

Prior to excavation, it was decided to conduct remote sensing trials at three sites in an attempt to identify potential buried features. In mid-October, proton magnetometer blocks were staked out at two sites, 34Cm-107 (the Beef Pens historic site) and 34Cm-235 (the prehistoric High Terrace site). A similar block was placed at site 34Cm-401, the George Wratten house, in preparation for an electrical resistivity survey. The surveys were conducted in mid-November by Dr. Brooks Ellwood of the University of Texas, Arlington. Dr. Ellwood thereafter provided the Principal Investigator with color maps depicting all anomalies identified. During testing, backhoe trenches and scrapes were excavated across the largest of the anomalies. The findings were mixed and were of minimal use; they are discussed in more detail in the site descriptions included later in this report (see Chapter 6).

Mapping

Once each site was relocated, the process of excavating and mapping began. Mapping was conducted with a TOPCON Electronic Total Station from a series of mapping stations placed in reference to a previously installed permanent datum point. Given the lack of accessible USGS benchmarks, the initial mapping station was assigned an arbitrary elevation of 100 m. This method allows for the production of detailed contour maps. During the mapping process, all excavation units, backhoe trenches, backhoe scrapes, cultural features, and prominent landmarks were also mapped in an attempt to produce the most accurate map possible. Each site was subjected to a thorough surface examination prior to mapping and excavation in order to locate and mark any surface artifacts for later examination and piece-plotting, as necessary.

The original site datums, placed from 1990 to 1992, consist of round aluminum tags nailed to prominent trees (or in two cases, utility poles), and bear stamped numerals designating the temporary site field numbers. In several cases, these datums had been removed by vandals or by natural processes. The original datums which remained were left in place but were supplemented by more permanent markers consisting of 50 cm (24 in) lengths of iron rebar topped with circular aluminum caps stamped with each site's official state trinomial number (34Cm-###). When a site's original datum was present, the new datum was placed at the base of the existing datum tree or pole. In those cases where the original datum tags were missing, the new permanent datums were placed either in the presumed locations of the old datums or in other logical locations.

Excavation

Mapping and excavation often occurred simultaneously. In most cases (especially for the prehistoric sites), an attempt was made to place the excavation units along a predetermined cruciform pattern; often this was not possible, usually due to the eroded or disturbed natures of the tested sites. In those cases, it was necessary to place the units in those areas retaining sufficient topsoil. On historic sites, units were often placed in or around features as well. Although a total of 17 test pits was excavated at one extremely long site (34Cm-239), the typical number was 8-10 units. Usually, one or two 1-x-1-m units were excavated, with the remainder being 50-x-50-cm units; occasionally, a .5-x-1-m unit was excavated, with all seven units at site 34Cm-425 of this type. At site 34Cm-401, several slit trenches measuring .5-x-2-m-long were excavated in an attempt to locate features.

The excavation units were hand-excavated with shovels, trowels, and picks in arbitrary 10-cm levels, and the fill was screened through 6.35 mm (¼ in) hardware cloth. Depths to which the units were excavated varied from site to site, based on previous finds and survey shovel testing; however, in no case did they exceed 60 cm in depth. All artifacts recovered through this process were collected and stored in ziplock plastic bags for later analysis. A level form recording provenience information, excavation technique, artifactual material, soil and feature descriptions, and photographic information was filled out upon completion of each level within a given excavation unit. All excavation units were backfilled after the final recordation process was complete.

To supplement the written records, a complete photographic record (including both black-and-white prints and color transparencies) was kept and was used to record the general topography and condition of the site area at the time of the testing, specific features, and the field techniques and methodology employed. Each site was photographed from a minimum of two viewpoints, which included any damage evident to the cultural property by vandalism, construction, or earth disturbances of any kind. As per the project Scope of Work

(SOW), one wall of each excavation unit was also photographed and profiled; the stratigraphy was, without exception, homogeneous and unremarkable.

In addition to the backhoe trenching already mentioned for sites 34Cm-107, 34Cm-235, and 34Cm-401, mechanical testing was conducted at two other sites in order to supplement the hand excavation and to clarify site formation processes. At site 34Cm-239, a total of 23 backhoe scrapes (measuring 2.4 m to 5 m wide and 4 m to 10 m long) was excavated in an attempt to identify buried features. The front-end loader of a backhoe was used to scrape off sediments in layers of a few centimeters at a time, and the exposed sediments were examined after each pass. Unfortunately, in most cases, the underlying clayey subsoil was quickly encountered, as most of the topsoil (a silt loam) had been removed by erosion and military disturbances. Only one of the scrapes, located on the southeast side of the site, encountered a potential feature. It is described in the site description for 34Cm-239. Also, 10 backhoe trenches were excavated along the eastern and western rims of site 34Cm-315, a geological blowout used as a lithic procurement area by prehistoric peoples, in order to elucidate the site's stratigraphy. Each unit was taken down to consolidated bedrock (30-60 cm below surface[bs]), and the trench walls spot-profiled. The eight units excavated were placed adjacent to the walls of the backhoe trenches.

Archival Research

Archival research during this project played a significant role in identifying some of the historic components examined during the testing process. A portion of the archival search was conducted at the Oklahoma State Historic Preservation Officer's (SHPO) Office of Preservation in Oklahoma City. Documents discussing the region's area-wide context themes and previously recorded historic sites, both National Register sites and National Historic Landmark sites, were reviewed for the area. Other archival research was conducted at the Lawton Public Library, the Oklahoma Historical Society in Oklahoma City, and the University of Oklahoma at Norman.

Prehistoric Artifact Analysis

The analysis of the prehistoric artifacts collected during the current project was designed to characterize as fully as possible the range of activities represented on each site, and makes use of artifact categories used previously in Texas and Oklahoma (see Appendix B for lithic artifact definitions and the summary table for the analyzed prehistoric artifacts). A total of 178 prehistoric artifacts was collected from the 15 tested sites. During the analysis of this material, each artifact was examined in sufficient detail to allow the identification of specific attributes and its placement into a specific artifact class (see Appendix B).

All the prehistoric artifacts consist of lithic materials (see Appendix B). The major artifact classes identified by this analysis include projectile points, bifaces, unifaces, and lithic debris. These artifacts were identified as to class and subclass, raw material type, and percentage of dorsal cortex (if present). In addition, the dimensions (i.e., length, width, and thickness) and the weight of all lithic tools were recorded, while the lithic debris was size-graded into six categories (i.e., less than 6.3 mm, 6.3-9.5 mm, 9.5-12.5 mm, 12.5-19 mm, 19-25 mm, and greater than 25 mm).

Historic Artifact Analysis

The analytical framework used for the examination of the 596 historic artifacts recovered was modeled after Stanley South's (1977) artifact pattern analysis method. Several categories are used for assignment of the recovered artifacts: Domestic, Architectural, Personal, and Activities. The domestic category designation was used for items related to food service (tableware) and food storage (including food preparation); domestic material includes household furnishings such as furniture, stoves, and lamp glass. The architectural category includes all items related to buildings such as brick, mortar, plaster, nails, window glass, and electrical items. The personal category contains items of individual use such as clothing, buttons, shoes, dolls, and smoking pipes. The activities grouping includes any nonhousehold items, transportation and farm-related equipment, tools, and firearms. Unidentified metal fragments, questionable ceramics or glass (those artifacts that were unidentifiable as to domestic tableware or storage, architectural, personal, or activities) were not included in the final analysis and were simply identified as unknown. The results of this analysis, as well as the methodological framework and codebook used, are included in Appendix C.

Faunal Analysis

During the course of the testing project, 129 fragments of faunal material were collected from five sites, most of which are historic in nature. These pieces were examined and categorized by Brian S. Shaffer of the Institute of Applied Studies at the University of North Texas. The results are described in Appendix D.

CHAPTER 5 GEOLOGIC STUDIES

by
Floyd B. Largent, Jr., and David Shanabrook

INTRODUCTION

The study area, the proposed location of a military vehicle-wash facility and associated water-retention lagoon, consists of a triangular 20-acre tract located on the west side of the East Cache Creek floodplain, on the northeast rim of the Fort Sill cantonment area. It is bound on the north by an overgrown gravel road, on the west by the San Francisco and St. Louis Railroad embankment, and on the east by Berry Road, a paved thoroughfare. A well-used gravel road cuts north-south through the project area, 150-200 m east of the railroad. A number of concrete World War I howitzer emplacements, largely intact and in good condition, are sprinkled across the area between the railroad and the gravel road (Figure 6), and should be avoided and preserved during the proposed construction. During the course of the geological investigations, a series of 25 core holes (CHs) measuring 3.5 m to 9.3 m (11.5 to 30.5 ft) deep were excavated with an industrial Giddings soil coring rig.

GENERAL GEOLOGY

The subareal geology of this region is discussed briefly in Chapter 2 and has been chronicled in more detail by Shanabrook (1993) in Volume 1 of this technical series (Peter and Weston 1993). Briefly, the near surface geology consists of 550-million-year-old Early to Mid-Cambrian gabbros and basalts belonging to the Roosevelt Gabbros formation of the Raggedy Mountain Gabbro group. These rocks are overlain and/or intruded by Mid-Cambrian granites and rhyolites of the Wichita granite and Carlton rhyolite groups. Subsequently, these igneous formations underwent extensive erosion, leaving the surface with up to 100-200 m of relief. Eventually the eroded Mid-Cambrian rocks were blanketed by more than 125 m of sands and shales belonging to the Mid- to Late Cambrian Reagan sandstone groups, as well as a series of marine limestones, dolomites, and shales classified as part of the Cambro-Ordovician Arbuckle group. Based on observed rock ages and thicknesses from surrounding areas, other shallow water carbonates, shales, and sands of Ordovician to Mississippian age may have been deposited in this area but were removed by later erosion. After a period of extensive folding, regional uplift, and renewed fault activity in the Pennsylvanian, this highly irregular post-Mississippian erosional surface was later covered by the Permian age (approximately 270 million years B.P.) red shales, sands, and conglomerates of the Post Oak Conglomerate formation of the Hennessey group (Gilbert 1982:25-28). Over the succeeding 200 million years, extensive erosion resulted in a deeply sculpted surface on which every geologic unit named above was exposed to a

greater or lesser extent (Shanabrook 1993:63). More recently, Quaternary deposits of gravel, sand, silt, and clay up to 12 m deep have been deposited across this eroded landscape.

The pre-Quaternary geology in this portion of Fort Sill is important for two main reasons: first, for its role as a source for the Quaternary sediments that are the principal object of this geologic study, and second, as a control of the types of depositional environments in which the Quaternary sediments were accumulated. In the current study area, the aforementioned Quaternary deposits consist primarily of younger Holocene-age clays, silts, sands, and gravels that were deposited by the fluvial processes of an actively meandering stream, i.e., East Cache Creek. The Pleistocene deposits noted by previous researchers (e.g., Hall 1978; Shanabrook 1993) are thought to be remnants of ancient alluvial terraces and were not observed in the current study area.

The Holocene-age sediments form the surface layer on the major floodplains of the streams in this portion of Fort Sill, and they rest unconformably on all of the older rock units described above (Shanabrook 1993). The thickness of the Holocene-age sedimentary deposits varies greatly within the region. In the valleys of both West Cache and Post Oak creeks, average sediment thicknesses of 3 to 4 m above bedrock were observed, although the thickness in some areas may be greater or lesser due to variations in the topography of the bedrock surface. During Shanabrook's 1993 investigations of Ketch, Medicine, and East Cache creeks, however, sediment thicknesses of up to 7 m were noted; Hall (1978) reports similar sediment thicknesses. During the current investigations, unconsolidated sediments were recorded to 9.3 m (30 ft) below the surface in most areas.

The sediments that were examined, which are described in more detail in a succeeding section and in Appendix A, were derived by a variety of processes ranging from extended fluvial and alluvial reworking of earlier Holocene, Pleistocene, Permian, and pre-Permian deposits to simple downwearing of exposed bedrock units. Weathering and subsequent erosion of the exposed Carlton rhyolites, Wichita granites, and Hennessey sandstones probably have provided a considerable portion of the sediment carried and deposited by East Cache Creek in the recent past. Regardless of the origin of the sediments being laid down, the dominant depositional process responsible for the observed sediments was fluvial action.

SEDIMENT DESCRIPTIONS AND GEOLOGICAL INTERPRETATIONS

General Comments

All the sediments that were observed in this study area were deposited by fluvial processes. With the exception of the bedrock, weathered bedrock strata (Cr horizons), and those overlying strata which may be derived from them, most of these sediments are Holocene in age, and were apparently laid down as a sequence of point bar, levee, backswamp, and associated deposits by a sinuous, meandering stream which has apparently repeatedly wandered back and forth across its floodplain, occasionally pinching off meander loops and switching its channel by the process of avulsion (see Shanabrook 1993). The assumed Holocene sediments throughout the study area are dominated by clays, silty clays, and a ubiquitous mix of sand, gravel, and clay in different proportions; in most cases these are capped by loams and clay loams.

While the examined stratigraphic profiles were, in many cases, quite dissimilar, a few general observations can be made. The surface soils throughout the survey area are defined by the USDA, SCS (1970) as Port Loam; Port series soils are those formed in loam and clay loam, under deciduous trees and tall grasses. Rootlets and small open krotovinas were common within the upper strata of each profile; mineral inclusions, particularly concentrations of iron oxide, manganese oxide, and calcium carbonate, were not uncommon in

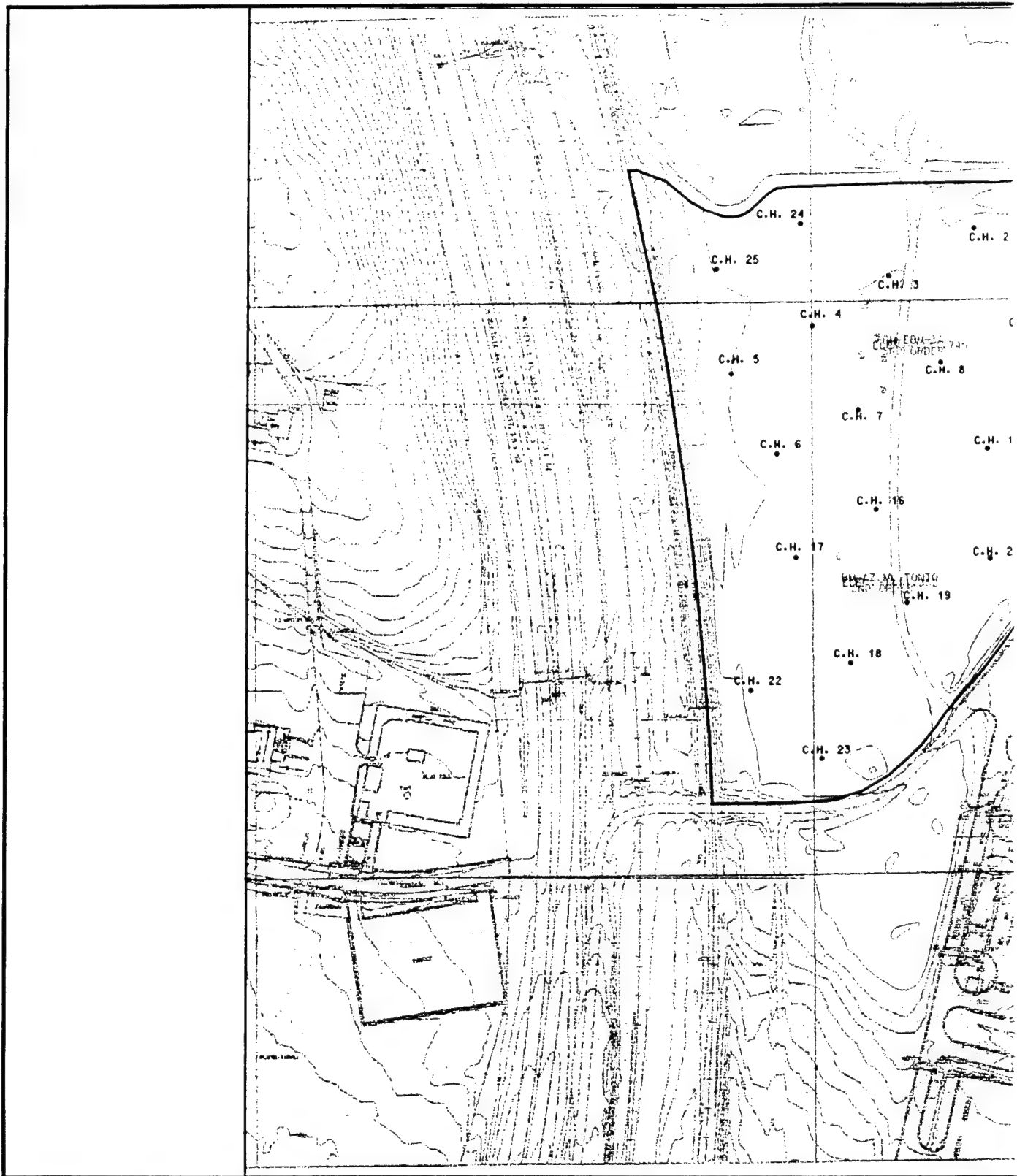


Figure 6. Coring locations within the East Cache Creek study area.

the more clayey lower strata. Chert, limestone, and rhyolite gravels were observed in small amounts throughout the profiles, though they were more common in the lower strata.

Buried soils are rare, reflecting the active nature of the floodplain. In four cases (twice in CH 5 and once each in CHs 7 and 24), datable paleosols were observed and were sampled for radiocarbon assay, yielding results ranging in age from the late Pleistocene to the late Holocene (see below); however, these soils were apparently isolated remnants, as they did not appear in nearby core holes or elsewhere. This suggests that the floodplain of East Cache Creek is rarely sufficiently stable to allow significant soil development to occur. In those cases in which soil development has occurred, the soils have apparently been almost entirely removed by subsequent stream action.

Modern soil development is, however, proceeding apace, although few completely developed classic A-B-C soil profiles were noted. In most cases, a very dark brown or black loam, often clayey or silty, was observed in the upper 1-3 m of the profile, and could be divided into several distinct A subhorizons. Few true B horizons were observed. In some cases, the A horizon was so well-developed that no trace of the parent C horizon remains, suggesting a somewhat lengthy period of relative stability.

The A horizon tended to grade into a clayey C horizon, occasionally with a recognizable transitional AC horizon in between. Often, this was the first of several additional nonrelated C horizons. In nine cases, the clay was a highly recognizable massive Cck unit, occasionally silty or clayey in part, which graded slowly and smoothly from very dark brown (10YR 2/2) through strong brown (7.5YR 4/6) to yellowish red (5YR 4/6) at the base. In nearly every case, the clays gave way to a stratum containing a variable and poorly sorted mixture of gravel, sand, and clay—the nearest thing to constancy in the entire suite of core profiles. The proportions of the three materials varied from hole to hole; in one hole the stratum might be a sandy clay, in another a gravelly sand. Thickness varied from a few centimeters to over three meters. Often the overlying contact was gradual, suggesting that the unit is related to the clay; sometimes it was abrupt. Occasionally it was possible to reach other strata beneath this unit, but in most cases the unit became so sandy and so saturated with water that it flowed up into the auger and clogged the bore. This water-bearing stratum is suspected to be the remains of a massive point bar or crevasse splay deposit.

Attempts were made to correlate the sediments observed in CHs 6 through 12, which lay along the longest of the five transects (see Figure 6). Stratigraphic variability is extremely high from one core hole to another for such a small study area, making correlations between the observed profiles somewhat difficult; however, very rough correlations are possible, and certain marker strata (see the preceding paragraphs) stand out (Figure 7). The extreme stratigraphic variability is believed to be largely attributable to localized alluvial mechanisms and human disturbance. For an explanation of the master horizon designations used, see Table 1.

Profile Correlations

In a sense, CH 6, the core hole located at the southwesternmost point of the third and longest transect, was the shallowest in the project area (see Appendix A and Figure 7). The hole was actually drilled to 9.3 m, but the presence of “quicksand” below 330 cm precluded samples from being recovered from any deeper than 350 cm. The uppermost stratum at this location consists of a 31-cm thick, loosely compacted, very dark gray (10YR 3/1) clay loam with a granular structure, which grades into a brown (10YR 4/3) silty, fine sandy loam with a weak granular, blocky structure. Given the lack of B horizon characteristics in the latter stratum, both are considered to be genetically related A1 and A2 subhorizons. They conformably overlie

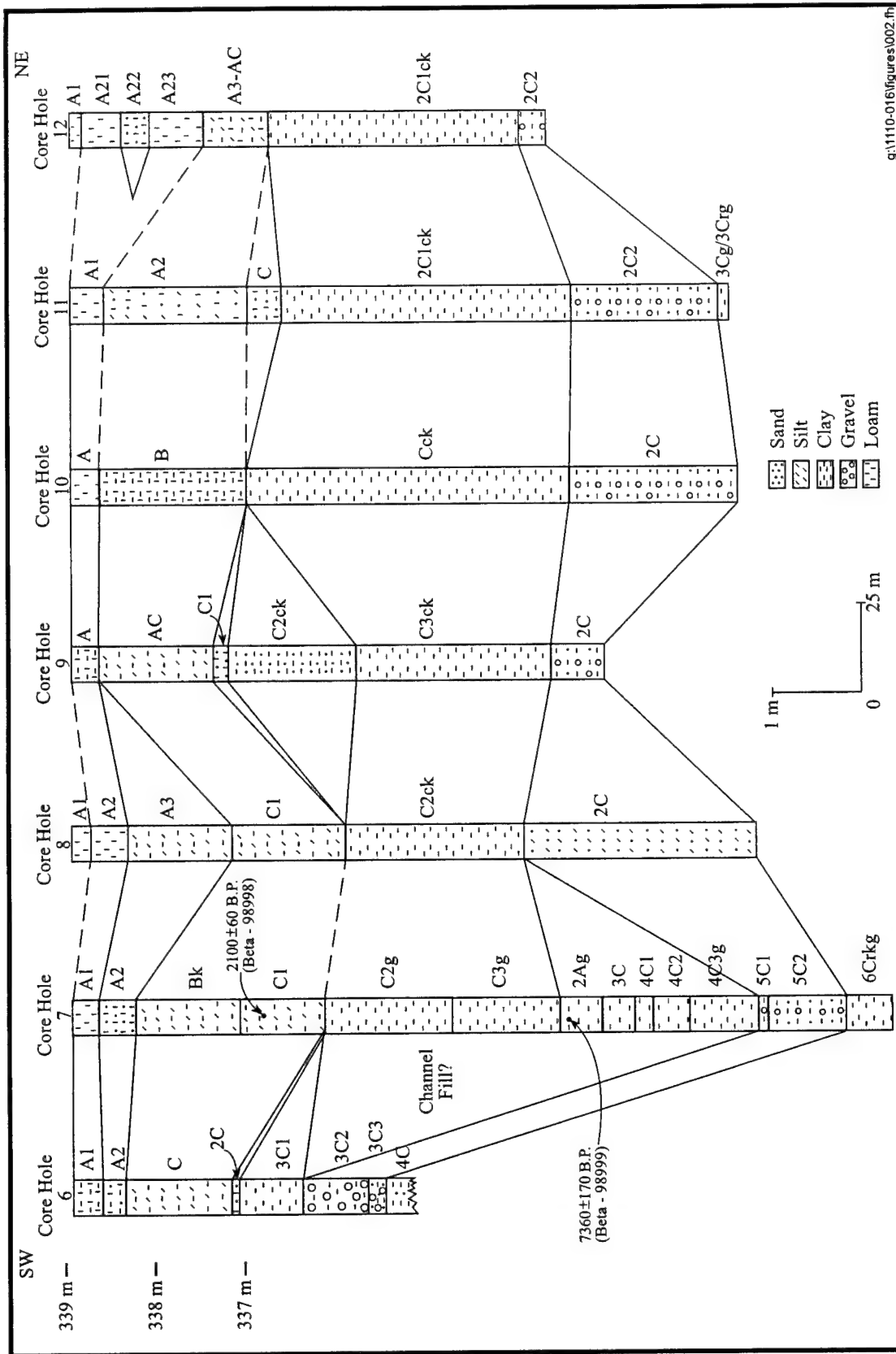


Figure 7. Stratigraphic correlations between Core Holes 6-12.

Table 1
Soil Horizon Designations

Horizon	Definition
A	Organic-enriched surface horizon, often displaying soil structure and weathering.
B	Subsurface horizon formed beneath an A horizon. Lacks original sediment/rock structure. Zone of maximum illuviation (clay, carbonates, humus, etc.).
C	Subsurface mineral horizon, parent material for overlying horizons. Unconsolidated or weakly consolidated, unmodified or very slightly modified by weathering process.
Cr	A subsurface horizon consisting of extensively weathered bedrock.
R	Consolidated bedrock.

Source: after Waters (1992):46-48. Note: only those designations used in the report are defined here.

Note:

Subordinate Designations Used With Master Horizon Designations: Each variety of soil horizon may be split into distinct subhorizons, and the designation modified according to content and characteristics:

Symbol	Meaning
c	Contains iron or manganese oxide concretions.
g	Exhibits gleying, caused by the reduction of iron saturated with water.
k	Contains calcium carbonate concentrations or concretions.

a massive, very dark brown (10YR 2/2) silty clay C horizon almost 120 cm thick. The C horizon is unconformably underlain by an 8-cm thick lens of brown (7.5YR 4/4) sandy loam, a 2C horizon, that does not appear in any other profile, though it resembles a similar lens (C1) in CH 9. This stratum gives way abruptly to a dark reddish brown (5YR 3/2) dense clay, designated here as a 3C1 horizon. This stratum contains occasional fragments of gravel (the usual limestone/chert mix), and grades into a yellowish red (5YR 4/6) clayey gravel 3C2 horizon, which in turn gives rise to a saturated, yellowish red clayey, gravelly, coarse sand. The boundary between this 3C3 stratum and the underlying dark yellowish brown (10YR 4/6) liquid sandy clay was uncertain, but they are thought to be unrelated, given their dissimilar colors and consistencies. This lowermost stratum is the liquid, flowing unit mentioned at the beginning of this account, and has been designated a 4C soil horizon in this location.

CH 7 exhibits the most complex profile in the correlated sample; it bears some relationship to the profiles observed in CHs 6 and 8, but is significantly different despite its close proximity to both. The two uppermost strata in this locality are A1 and A2 horizons, similar in color and thickness to those of CH 6, and the underlying related stratum consists of a very dark brown (10YR 2/2) silty clay. However, in CH 7, this takes the form of a weakly developed Bk horizon which is underlain by a slightly lighter (7.5YR 3/2) silty clay C1 horizon. Together, these two strata, which total 212 cm in thickness, are directly correlated to CH 6's C horizon; the only difference is that CH 6 never developed the B horizon observed in CH 7. The C1 horizon in CH 7 contained datable charcoal fragments, which yielded a radiocarbon age of 2100 ± 60 BP (Beta-98998). The related C horizons in CH 6 and CH 8, which are very similar in color, texture, and stratigraphic position to CH 7's Bk/C1 horizon, can be assumed to be of similar ages. The C1 unit grades

into a similarly colored, very dark grayish brown (10YR 3/2) massive clay with a minimal sand content; occasional streaks and mottles of strong brown (7.5YR 5/8) and brown (10YR 4/3) below 354 cm, increasing with depth, mark it as a C2g horizon. This stratum does not really correlate with any other stratum or horizon in CH 6, not even the 3C1 horizon, which is of a different color and stratigraphic position and is not gleyed. Indeed, this stratum and the underlying clayey strata to a depth of 788 cm are suspected to represent channel fill material. It seems likely that an old channel of East Cache Creek or a tributary was located in this area at one time; the clayey nature of all the strata from 283-788 cm suggests backwater deposits of the sort that accumulate in abandoned channels resulting from avulsion and channel cut-offs, though no evidence of such exists on the surface. The argument for a channel in this location is strengthened by an examination of the somewhat regular gravelly layer at the bases of CH 8-12. This and some of the overlying strata appear to reflect the presence of a buried point bar or crevasse splay deposit extending northeast of the proposed channel. Further, CHs 4 and 16, 50 m to the northwest and southwest, show a similarly complex stratigraphy that bolsters this argument (see Appendix A).

The C3g horizon directly overlies a 50-cm layer of mottled dark gray (10YR 4/1) and very dark grayish brown (10YR 3/2) highly gleyed clay with a weak granular structure, suggesting some weathering, which was interpreted as a buried 2Ag horizon; samples were collected for later radiocarbon assay, and provided an age of 7360 ± 170 BP (Beta-98999). Interestingly, this was the only buried soil noted in the correlated sample, and it appears to date from the Middle Holocene -- considerably older than all but one of the other non-consolidated sediments dated for this project. Its survival here might be due to the somewhat more protected nature of the postulated in-filled former stream channel. This stratum directly and unconformably overlies a 3C horizon consisting of a very dark grayish brown (10YR 3/2) unweathered clay, which in turn overlies a 4C clay horizon. The 4C horizon splits into three subhorizons: a dark gray (10YR 4/1) 4C1, a very dark grayish brown (10YR 3/2) 4C2, and a gleyed brown (10YR 4/3) to grayish brown (10YR 5/2) 4C3cg with occasional yellowish brown (10YR 5/8) mottles and manganese oxide concretions. The underlying 5C horizon is the first since the C1 horizon that actually correlates with a stratum in CH 6. In this case, the 5C1 and 5C2 horizons correlate roughly with the 3C3 and 3C3 horizons of CH 6, despite differences in color, given their very similar compositions. The bottommost stratum in CH 7 is a highly gleyed, dark gray (10YR 4/1) massive clay, very firm to extremely hard, which contains occasional calcium carbonate concretions and concentrations. This was interpreted as a weathered bedrock horizon and was designated 6Crkg.

The surface sediment of CH 8 consists of a dark grayish brown (10YR 4/2) loam with a pronounced granular structure, which was identified as an A1 horizon. With the exception of CH 12's A1 horizon—with which it is identical—this unit does not correlate colorwise with the surface strata of any the other core holes in this sample. Elsewhere, only at CH 2 did a similarly colored, surface A horizon occur; in a number of cases, however, browner A subhorizons underlie the darker, organic-rich surface soils. This suggests several possibilities: that this stratum consists of fill from elsewhere; that this area has been differentially disturbed by human or natural means, causing subsurface soil horizons to be exposed at the surface; or that this stratum has been completely removed by unknown processes everywhere along the transect except at CH 8 and 12. The first two possibilities seem more likely.

Although the A1 horizon here does not correlate with the A1 horizons observed elsewhere, the A2 horizon bears a strong resemblance to the A1 horizons of CHs 6 and 7 and, to a lesser extent, that of CH 9, and is tentatively correlated with them. It consists of a very dark gray (10YR 3/1) loam with a weak granular structure, which grades into a loosely compacted, dark yellowish brown (10YR 3/4) silt loam with a weak granular structure, recognized as an A3 horizon similar to A2 horizons examined in the previous core holes. The A3 horizon gives way abruptly to a very dark brown (10YR 2/2), massive silty clay nearly identical to the C1 horizon of CH 6 as well as the Bk/C1 horizons of CH 6 and CH 7, respectively. Despite the abrupt

contact, this has been designated a C1 horizon as well, rather than a 2C; it seems unlikely that the overlying strata are unrelated to this stratum and the corresponding strata in the previous units, given their overall similarity. The silty clay C1 horizon grades into a firm, highly compacted variable clay C2ck horizon, described as a marker horizon in a previous section. This is the core hole in which it makes its first appearance. The stratum is a Cck unit, occasionally silty or clayey in part, which grades slowly and smoothly from very dark brown (10YR 2/2) through strong brown (7.5YR 4/6) to yellowish red (5YR 4/6) at the base. It contains a few pea-sized chert and limestone gravels; occasional lamellae or krotovinas observed trailing downward, filled with 10YR 2/2 clay or silty clay; occasional matchhead-sized iron oxide and manganese oxide concentrations; and a few calcium carbonate concentrations. In this locality, the stratum is 221 cm thick; it correlates very roughly with the C2g and C3g horizons of CH 7. The 2Ag horizon and several underlying strata present in CH 7 do not appear in CH 8; instead, the clay unconformably overlies a very coarse, silty, wet, yellowish red (5YR 4/6) sand containing occasional small gravels, which becomes increasingly saturated with water as depth increases, until below 785 cm it becomes quicksand, clogging the bore. This stratum bears strong resemblances to the 3C2/3C3 horizons of CH 6 and the 5C horizon of CH 7, correlating well with both.

Though similar, the stratigraphic relationships between CHs 8 and 9 are as frustratingly vague as those expressed between CHs 7 and 8. The surface sediment, a very dark gray (7.5YR 3/1) moderately compacted clay loam with a granular structure, is similar but not identical to CH 8's stratum A2 horizon, and is quite similar to A1 horizons elsewhere along the transect and across the study area; it is tentatively correlated with these. It grades into a dark brown (7.5YR 3/2), moderately compacted silty clay with a granular structure, which is considered to be a transitional AC horizon, considering its obvious weathered condition and its strong similarity in color and composition to the C, Bk, and C1 horizons of CH 6, CH 7, and CH 8, respectively, to which it has been correlated. This fades gradually into an 18-cm thick layer of brown (10YR 4/3) sandy loam, evidently a localized zone not reflected in CHs 8 or 10 (although similar strata appear in CHs 6 and 11 in approximately the same stratigraphic position, suggesting the presence of a thin, discontinuous sandy loam unit). The sandy loam becomes a dark brown (7.5YR 3/2-3/3) sandy clay C2ck horizon between 180 and 322 cm—another stratum unique to CH 9—whereupon it grades into the distinctive variable clay previously seen in CH 8 (C2ck horizon); in CH 9, it falls into a C3ck position. This gives way, at a depth of 544 cm, to a yellowish red (5YR 4/6) sandy, gravelly clay 2C horizon very like the 2C horizon of CH 8 and its predecessors. Due to the saturated nature of the stratum, it was not feasible to drill below 608 cm.

CH 10 was capped with a black (10YR 2/1) loam with a pronounced granular structure, in this case an A horizon, which despite minor differences in color and texture appears to correlate with the A1 horizon of CH 9. The underlying clay loam is, in this case, considered to be a B horizon, considering its high clay content and granular structure. It correlates well with the AC horizon of CH 9 and related strata in the previously discussed profiles. The B horizon grades without fanfare into the familiar variable clay Cck horizon, which in this stratum is 367 cm thick; it correlates perfectly with the C3ck horizon of CH 9. The variable clay nonconformably overlies a strong brown (7.5YR 4/6) gravelly, clayey, coarse sand—this core hole's version of the water-bearing gravelly unit seen elsewhere—which becomes increasingly wet with depth. It became impossible to capture a core sample of this material below approximately 750 cm.

The uppermost stratum at CH 11 was found to be a very dark brown (10YR 2/2) loam with a pronounced granular structure, which was interpreted as an A1 horizon correlating with CH 10's A horizon. It grades into a weak granular dark brown to dark yellowish brown (10YR 3/3-3/4) silty, sandy loam, an A2 which bears only a nodding relationship with the B horizon of CH 10, a darker clay loam. The correlations between these two are tentative and are based primarily on stratigraphic position. The A2 horizon gradually becomes a dark brown (7.5YR 3/3) extremely sandy clay loam, defined here as a C horizon, which unconformably

overlies a 2C1ck horizon identical in color and composition to the Cck horizon of CH 10. It is suspected that both the A2 horizon and the C horizon, which correlates with nothing in CH 10, are the result of differential formation processes which eroded the soil down to the variable clay horizon, removing any trace of the A and B horizons of CH 10 from this area and replacing them with different material which is unrelated to the current 2C1ck. Whatever the case, the 2C1ck clays contain minimal amounts of sand and silt in this location and extend for some 323 cm, to 567 cm bs. Instead of abruptly adjoining the underlying gravelly/sandy unit, it grades into it. This familiar yellowish red (5YR 4/6) stratum extends to 737 cm bs before giving way to an extremely hard, dark brown (7.5YR 3/2) clay with a minimal sand content. This unit is extensively gleyed, with common greenish gray (5BG 6/1) streaks and mottles and occasional strong brown (7.5YR 5/8) mottles. This stratum is a bit enigmatic, as only 10 cm of it was recovered before the overlying stratum flowed into and clogged the auger bore. It may be a 3Cg horizon, although from its extreme hardness it is suspected to be a weathered shale bedrock, a 3Crg horizon.

The northeasternmost core hole along the transect, CH 12, shares with CH 8 the brown loam as an A1 horizon. This time, it grades into an A2 horizon which has itself been split into three sub-subhorizons, by the intervention of a lens of loamy sand. The A21 and A23 horizons (15-60 cm and 92-153 cm bs, respectively) are identical dark brown (7.5YR 3/2) loams with a weak granular structure; the intervening A22 lens (60-92 cm) consists of brown (10YR 4/3) loamy, coarse quartz sand and appears to be very localized. The entire A2 horizon correlates roughly with the A1 horizon of CH 11. It grades into an A3-AC transitional horizon consisting of a very dark grayish brown (10YR 3/2) silty clay loam with a weak granular to massive structure; this appears to correlate generally with the A2 horizon of CH 11. The A3-AC horizon unconformably contacts the variable clay familiar from CHs 8-11, which this time is 286 cm thick (224-510 cm bs), and as in CH 11 grades into the yellowish red sand/gravel/clay mixture, here also labeled a 2C2 horizon. By 528 cm bs, the 2C2 had become so sandy and liquid that it was clogging the bore and coring ceased.

Radiocarbon Ages Obtained for the Project Area

Six radiocarbon ages were obtained for various sediments within the project area (Table 2). Four were from buried paleosols, two of which were observed in CH 5, one in CH 7, and the fourth in CH 24. Two of the paleosol samples yielded Late Holocene ages ranging from 1120 ± 60 BP (Beta-98996) to 2160 ± 60 BP (Beta 99001), which was not unexpected; the active nature of the floodplain tends to preclude the preservation of older soils, although occasionally portions of such older soils might be expected to remain within small isolated areas such as inset terraces and sealed channel fill. This is exactly the situation with the 2Ag soil discovered within Stratum 7 of CH 7, 550-600 cm, which appears to have developed within an old in-filled stream channel. This soil, which yielded an age of 7360 ± 170 BP (Beta 98999), owes its survival to being sealed by later floodplain sediments.

It was the fourth paleosol sample, however, which yielded the real surprise. This sample, Beta-98897, was collected from a context 567-598 cm bs in a 6Abg horizon extending from 521-886 cm bs in CH 5 (Stratum 7); it was the only sample dated by the Accelerator Mass Spectrometry (AMS) method, due to the low organic content. Quite unexpectedly, it yielded a radiocarbon age of $30,930 \pm 420$ BP. This suggests the exciting possibility that this is small remnant of a Pleistocene paleosol, which is perched near the western edge of the East Cache Creek floodplain, exactly where one would expect such a remnant to occur. Of course, the possibility that this is a misidentified weathered bedrock Cr horizon (see the following discussion for Beta-99000) must not be discounted. Yet, one would expect that if this were the case, the sample would have produced a date with more uncertainty; that is, the age would appear as something like " > 30930 BP" as Beta-99000 does. This is not the case for Beta-98997 -- it has a solid date range of ± 420 years.

Table 2
Radiocarbon Ages for Core Samples within the Project Area

Radiocarbon Sample	Core Hole	Stratum	Depth (cm bs)	Horizon	Measured Age (yr BP)	Conventional Age (yr BP)
Beta-98996	5	3	71-101	2A	990 \pm 60	1120 \pm 60
Beta-98997	5	5	567-598	2ABg	30940 \pm 420	30930 \pm 420
Beta-98998	7	4	185-245	C1	2040 \pm 60	2100 \pm 60
Beta-98999	7	7	550-580	2Ag	7270 \pm 170	7360 \pm 170
Beta-99000	17	14	846-880	8Cr	> 30870	> 30830
Beta-99001	24	4	248-286	2Ak	2040 \pm 60	2160 \pm 60

Whatever the situation, it appears that the overlying sediments are much younger than this one, although this remains uncertain since none of those sediments were dated. Like Stratum 7 in CH 7, this seems to be an isolated remnant of a soil that was preserved by chance within an active floodplain. It too may have been sealed at the bottom of a relic stream channel.

Two other radiocarbon samples were also collected. One consisted of a bulk sediment sample containing charcoal fragments from CH 7's C1 horizon, 185-245 cm bs. These fragments yielded a radiocarbon age of 2100 \pm 60 BP (Beta-98998), again an expected late Holocene age and one consistent with strata in comparable contexts (see, for example, Beta-99001). The final sample was collected from an 8Cr unit at the base of CH 17, from a depth of 846-880 cm bs; this material, a very hard, gleyed sandy clay which was interpreted as an extensively weathered bedrock, produced a radiocarbon age of > 30830 BP (Beta-99000). This indicates that this stratum is, indeed, weathered bedrock, and probably lies below the typical level of alluvial erosion within this project area. It may be considered as a "control" for the other samples.

SUMMARY AND ARCHEOLOGICAL IMPLICATIONS

The sediments observed during the excavation of 25 core holes within the study area provide ample evidence of an active, energetic floodplain environment, the alluvial processes and subprocesses of which are the major contributors to the stratigraphic variability which makes attempting correlations between various profiles extremely difficult. Previous work on the East Cache Creek floodplain by Hall (1978) and Shanabrook (1993) revealed similarly complex depositional environments, although with perhaps somewhat more stability than the one revealed in this portion of the floodplain.

In 1977, Hall (1978) examined the east cutbank of the creek approximately 400 m east of the project area, some 430 m south-southeast of Hoyle Bridge. He describes a profile consisting of light grayish brown to brown silty sands and clays, with paleosols occurring at 90 and 240 cm below the surface. Taking into account differences in textural interpretations based on the use of different classification systems (e.g., calling a sediment a silty sand rather than a loam, as was done here), his descriptions of sediments observed in his project area are not dissimilar from those observed in the current study area. However, the stratigraphy was significantly different: the strata in the current study were not so heavily calcified as those exposed farther east; no pure sand units were noted; and his paleosols were not observed here. Previous geoarcheological research has also been conducted by Shanabrook (1993) on the west side of the East Cache Creek floodplain, some 2 km to the north and less than 1.5 km to the south; his work revealed a similar but somewhat more stable environment containing numerous paleosols. The oldest of these was located more than 4 m below the surface and yet dates only to $3,210 \pm 135$ years before present, suggesting that all the observed sediments were deposited no earlier than the late Holocene epoch.

By and large, it seems the current study area is somewhat more active than Shanabrook's study area, disallowing soil development in most cases. As Shanabrook points out elsewhere on East Cache Creek, "the main culprits in retarding soil development appear to be erosional removal of developing organic zones . . . and the continued moderately rapid deposition of fresh alluvium" (Shanabrook 1993:76). Multiple local informants stated during the fieldwork that the study area is often under as much as 2 m of water during yearly floods; at best, such activity during Holocene times may not have allowed sufficient stability for many soils to form and, if energetic enough, may have remove segments of soil profiles before they could completely form. However, unlike Shanabrook's area, this project area retains several older paleosol remnants.

The geologic history of the study area has a number of important geoarcheological implications. The most important to remember is that this area seems to have been heavily modified by cycles of fluvial erosion and redeposition. The activity of the stream has ensured that most (though obviously not all) of the unconsolidated older sediments—particularly those of Pleistocene age—will have been removed and reworked into younger deposits, with the result that older occupational surfaces will have been erased. Only in rare instances will portions of old stable surfaces have been sealed by overbank deposits and preserved; this is the case for the deeply-buried 2Ag horizon noted in CH 7, which appears to have been formed within an abandoned stream channel and later sealed by more recent sediments which protected it from later erosion, and may explain the presence of the apparent 6Abg horizon noted in Stratum 7 of CH 5.

Based on the collected radiocarbon ages, nearly all of the observed sediments are Late Holocene in age, less than 2,200 years old. The exceptions are the weathered bedrock observed at the base of CH 17 and, of course, the aforementioned relict 6Abg and 2Ag horizons found in Chs 5 and 7, respectively. Only within these or similar remnant paleosols may any sites deriving from earlier than the Middle Holocene be found; however, the soils are so fragmentary in nature that this seems unlikely. In short, deeply buried and preserved late Pleistocene and Early- to-Mid-Holocene age sites are unlikely to occur within the study area, since the creek's active alluvial processes would have removed most occupational surfaces. It is possible that older deposits might be located beneath the Holocene surface sediments; however, any sites are likely to be few in number, difficult to find, and buried to a considerable depth, if indeed they survived the numerous episodes of erosion and deposition recorded in the Late Holocene deposits.

CHAPTER 6

RESULTS OF THE ARCHEOLOGICAL TESTING

by
Floyd B. Largent, Jr., Steve Gaither, and Joe C. Freeman

INTRODUCTION

In accordance with the SOW for Delivery Order No. 0036 of Contract No. DACW56-92-D-0010 with the USACE, Tulsa District, GMI of Plano, Texas, recently carried out test excavations at 15 archeological sites on the Fort Sill Military Reservation, Comanche County, Oklahoma. Six of these sites (34Cm-42, 34Cm-58, 34Cm-235, 34Cm-407, 34Cm-425, and 34Cm-476) are of the prehistoric period, while six others (34Cm-107, 34Cm-401, 34Cm-405, 34Cm-414, 34Cm-418, and 34Cm-488) are of the historic period; three sites (34Cm-239, 34Cm-315, and 34Cm-428) proved to be multicomponent, containing both historic and prehistoric cultural material. The test excavations were carried out in order to clarify the NRHP status (see 36 CFR § 60.4 [a-d]) for each of the 15 sites, all of which had been previously recommended as being of unknown eligibility for inclusion in the NRHP. The results of these excavations are summarized in Table 3.

The excavations were carried out from November 13 through December 4, 1995, and involved a crew of six to seven individuals (four crew members, a Field Supervisor, and one to two Project Archeologists), deployed as a single excavation team under the supervision of the Project Archeologists (Floyd B. Largent, Jr., and Melissa M. Green) and the Principal Investigator (Mr. Duane E. Peter). Ms. Kellie A. Krapf served as Field Supervisor and TOPCON technician. A total of 103 person days was expended during the course of the testing project.

RESULTS OF THE TESTING

Site 34Cm-42 (Archery Range II Site)

This prehistoric site is located within the Fort Sill Archery Range, near the base of Medicine Bluffs, on a flat bench above Medicine Creek. It lies at an elevation of approximately 350.5 m (1,150 ft) amsl; the vegetation consists mostly of mixed grasses and Cross-Timbers vegetation. Soils are mapped as Port loam (USDA, SCS 1970), and extend to a minimum depth of 50 cm.

Table 3
Summary of Fifteen Archeological Sites Tested During the 1995 Fort Sill Data Recovery Program

State Site Number and Name	USGS Quad & UTM Coordinates	Site Type	Cultural Materials Observed or Collected During Testing	Contextual Integrity
34Cm-42 Archery Range II Site	Fort Sill, OK Zone 14 N 3838310 E 553330	Prehistoric lithic scatter	14 flakes and flake fragments, 3 shatter fragments, 1 mammal bone fragment, 2 lead-filled .45 cal brass bullets (modern)	Fair; moderate disturbance
34Cm-58 Blue Beaver Site	Mount Scott, OK Zone 14 N 3836700 E 541550	Prehistoric lithic scatter; with a historic component	52 flakes and flake fragments (Potter chert, rhyolite, chert, quartzite, and quartz), 20 shatter fragments, 1 uniface fragment, 2 Archaic projectile point bases, 1 solarize manganese glass bottle rim fragment with square bead	Fair; moderate disturbance
34Cm-107 Beef Pens Site	Arbuckle Hill, OK Zone 14 N 3837000 E 557360	Historic slaughtering site; with an isolated prehistoric find	> 63 large mammal bone fragments, 1 cut nail, 2 wire nails, 1 corrugated nail, 1 chert shatter fragment	Fair; moderate disturbance
34Cm-235 High Terrace Site	Fort Sill, OK Zone 14 N 3839500 E 551960	Prehistoric lithic scatter; with a historic component	13 flakes (Potter chert, chert, rhyolite?), 3 Potter chert shatter fragments, 3 fire-cracked rocks (rhyolite?), 1 ground stone artifact fragment (sandstone), 1 iron mule shoe	Poor; extensive disturbance
34Cm-239 Rocky Twins Site	Fort Sill, OK Zone 14 N 3840040 E 550180	Historic artifact scatter; prehistoric lithic scatter	30 flakes and flake fragments, 4 shatter fragments, 1 chert end scraper, 2 chert projectile point fragments, 1 chert biface, 1 copper/brass rivet, 2 fragments of cast iron, 1 wire nail fragment, 2 amber/brown bottle glass fragments, 1 aqua bottle glass fragment, 1 bone fragment, 1 mussel shell fragment, 2 crossmendable decorated whiteware fragments	Poor; extensive disturbance
34Cm-315 Geological Blowout Site	Mount Scott, OK Zone 14 N 3833000 E 539740	Prehistoric lithic procurement site; historic trash dump	1 purple quartzite hammerstone, 1 crude quartzite flake, 1 quartzite core, 3 solarized manganese glass fragments, 3 amber glass bottle fragments, including base and crossmendable bottle fragments, 1 light green fruit jar fragment, 3 Boyd's Genuine milk glass canning jar lid liner fragments, 4 stoneware fragments, 1 undecorated ironstone fragment, 1 tin can, 1 zinc canning jar lid	Poor; extensive disturbance
34Cm-401 George Wratten Site	Fort Sill, OK Zone 14 N 3835080 E 557155	Late nineteenth/early twentieth-century historic homestead	2 iron rods, 1 copper flashlight bulb base, 1 wire nail, 1 Coca-Cola can (modern), 2 iron bolts, 1 iron nut, 1 unidentifiable copper fragment, 1 unidentifiable iron fragment, 3 iron pipe fragments, 1 .45 cal brass cartridge case (modern), 2 coal fragments, 3 aqua window glass fragments, and 2 bottle glass fragments, one clear and one light green	Poor; extensive disturbance
34Cm-405 Werye Homestead Site	Mount Scott, OK Zone 14 N 3833740 E 536880	Early twentieth-century Comanche homestead	130 glass fragments, 1 gemstone (apparently from a ring setting), 3 ceramic fragments, 28 unidentifiable metal fragments, 1 plastic fragment, 7 coal fragments, and five features: two concrete foundations, a stone foundation, a collapsed concrete storm shelter, and a well.	Poor; extensive disturbance

Chapter 6: Results of the Archeological Testing

Table 3 (cont'd)

State Site Number and Name	USGS Quad & UTM Coordinates	Site Type	Cultural Materials Observed or Collected During Testing	Contextual Integrity
34Cm-407 Rabbit Hill II Site	Fort Sill, OK Zone 14 N 3841130 E 550210	Prehistoric lithic scatter	4 flakes, 3 shatter fragments, 1 Alibates dolomite end/side scraper	Poor; extensive disturbances
34Cm-414 Nahwauconic Homestead Site	Fort Sill, OK Zone 14 N 3842340 E 549100	Early twentieth-century Comanche homestead	2 intact glass bottles, 27 glass fragments, 1 crown cap, 1 metal clock cog, 1 graphite battery core, 16 ceramic fragments of various types, 74 wire nails of various types, 23 asphalt shingle fragments, and eight features: a collapsed storm shelter, a well, two concrete foundations, a septic tank, two stone rings, and a disturbed cobblestone feature.	Fair; moderate disturbance
34Cm-418 Lonely Well Site	Mount Scott, OK Zone 14 N 3834330 E 539640	Late nineteenth/early twentieth-century historic homestead	5 clear bottle glass fragment, 1 milk glass bottle fragment, 3 aqua fruit jar fragments, 3 amber/brown bottle glass fragments, 6 melted amber/brown glass fragments, 3 solarized manganese glass bottle glass fragments, 4 stoneware fragments, 5 undecorated whiteware fragments, 1 blue-tinted ironware fragment, 1 iron spike, 5 wire nails, 1 wire fragment, and two features: stone and concrete well, and a presumed root/storm cellar depression	Poor; extensive disturbance
34Cm-425 Rabbit Hill III Site	Fort Sill, OK Zone 14 N 3841290 E 540000	Prehistoric lithic scatter	1 flake	Poor; extensive disturbance
34Cm-428 Chiwoonny Homestead Site	Fort Sill, OK Zone 14 N 3840160 E 557140	Early twentieth-century Comanche homestead; with prehistoric component	9 bottle glass fragments, 3 window glass fragments, 1 light bulb fragment, 1 sherd of fiestaware, 1 wood screw, 1 copper rivet, 20 wire nails, 4 prehistoric chert flakes, 6 prehistoric chert shatter fragments, and four features: a large depression, a mortar and brick foundation, a small squarish brick feature, and a concrete horse trough.	Fair; moderate disturbance
34Cm-476 Lawton Aqueduct Site	Fort Sill, OK Zone 14 N 3835000 E 551100	Prehistoric lithic scatter	3 pieces of shatter, 1 flake fragment, and 1 bifacial thinning flake	Poor; extensive disturbance
34Cm-488 Daly Hill Site	Fort Sill, OK Zone 14 N 3834640 E 546260	Late nineteenth/early twentieth-century historic homestead	8 bottle glass fragments (3 clear, 2 manganese/solarized, 2 aqua, 1 emerald), 1 window glass fragment, 2 whiteware fragments, 1 stoneware fragment, 1 concrete fragment, 1 turtle shell fragment, 3 wood fragments, 91 wire nails, 7 tin can fragments, 3 misc. wire fragments, 1 cast iron hook, an old quarry, and four features: a collapsed concrete well, two concrete foundations, and an intact storm shelter built into Daly Hill.	Fair; moderate disturbance

The Archery Range II site was originally recorded by Shaeffer (1959, 1966) as an extensive lithic scatter with hearth features and faunal remains; prehistoric site 34Cm-41, Archery Range I, is located nearby. Site 34Cm-42 was re-recorded by GMI in 1990; at that time, few surface artifacts and no hearth-like features were noted, although the scatter of bone previously reported by Shaeffer was located (Peter and Weston 1993). On November 14, 1995, a GMI crew returned to the site to conduct test excavations. This site proved to be one of the least-disturbed in the 15-site sample; however, several two-track roads criss-cross the site area, and thick brush and briars in some areas suggest that parts of the site have been clearcut in the past. The open areas of the site are covered by a thick mat of leaves and/or grass; ground visibility was therefore somewhat poor, except along the roadbeds. Sediments at the site consisted of an apparently undisturbed dark brown sandy loam, extending 40-50 cm bs. On the west end of the site, which slopes down toward Medicine Creek, a road cut has revealed a small scatter of broken mammal bone fragments, as previously recorded by both Shaeffer and GMI. A .5-x-1-m test unit was excavated on the ledge from which the material had eroded, but no subsurface bone was observed or collected from this unit. In all, eight test units were excavated: a 1-x-1-m unit, a .5-x-1-m unit, and six 50-x-50-cm units. An estimated 1.325 m³ of soil was removed during this process.

Five test units proved to contain cultural material. Unfortunately, the subsurface assemblage collected from the site was meager (n = 17 artifacts and two bone fragments). No artifacts were observed on the surface, although a number of small bone fragments were observed along the west edge of the site. No evidence was found of the "many hearths and associated objects" which Shaeffer recorded for this site (Shaffer 1959, 1966). Based on this project's findings, the current site area is estimated at 3,250 m² or 65 m NS by 50 m EW (Figure 8).

Prehistoric Artifacts Collected

Seventeen prehistoric artifacts were collected from subsurface contexts at site 34Cm-42, including 14 flakes and flake fragments and three shatter fragments. These cultural materials are discussed by test unit in the following section.

Test Unit 2 (50-x-50 cm)

Level 2, 10-20 cm bs

Four artifacts were collected from this excavation level: three unmodified tertiary flakes and a secondary shatter fragment. Two of the flakes were apparently made from igneous andesite; one falls into Size Grade 3 (12.5-19 mm), the other into Size Grade 5 (6.3-9.5 mm; see Appendix B). Both the remaining flake and the shatter fragment are made of chert, and also fit within Size Grade 5; both appear to have subjected to heat-treating.

Level 3, 20-30 cm bs

This excavation level produced only one artifact, a unmodified chert tertiary flake. This piece falls into Size Grade 5, and bears no evidence of heat treatment.

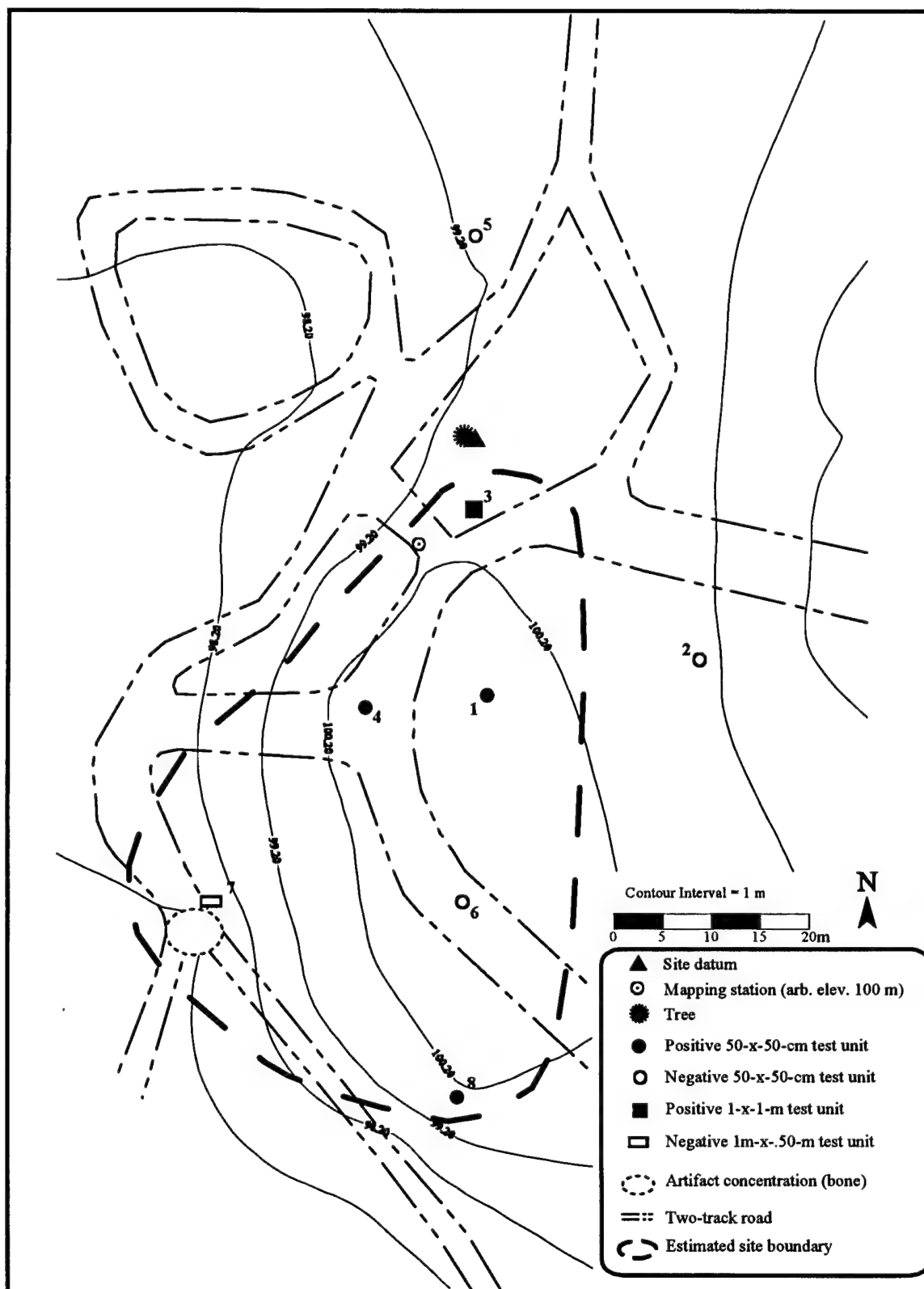


Figure 8. Plan map of the Archery Range II site (34Cm-42).

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Test Unit 3 (1-x-1 m)

Level 1, 0-10 cm bs

The first 10-cm level of this 1-x-1-m excavation unit (the only one this large on the entire site) produced three artifacts: a tertiary flake fragment, and two tertiary flakes. All are quite small, fitting within Size Grade 5 (6.3-9.5 mm), and have not been heat-treated. The two flakes are made of Potter chert (also referred to as Potter quartzite—see Appendix B), while the flake fragment appears to be made of a crude conglomerate material with inclusions of siltstone, sand, quartz grains, and other material. This material, which probably originates in the nearby Wichita Mountains, appears occasionally in the Fort Sill artifact assemblages.

Level 2, 10-20 cm bs

Two artifacts were collected from this level; both are made of Potter chert and bear no evidence of heat-treating. One is a secondary flake which falls within Size Grade 3. The other, a secondary shatter fragment, fits within Size Grade 5.

Level 3, 20-30 cm bs

Two unmodified debitage pieces—a tertiary flake and a tertiary shatter fragment—were collected from this excavation level. Neither bears evidence of heat treatment. The flake is of Potter chert and falls within Size Grade 4 (9.5-12.5 mm; see Appendix B). The shatter fragment is chalcedony and belongs within Size Grade 5.

Level 4, 30-40 cm bs

This excavation level also yielded two artifacts: a secondary flake and a tertiary bifacial thinning flake. Both are manufactured from Potter chert. The flake, which falls within Size Grade 5, may have been heat-treated; the analysis was inconclusive in this respect. The bifacial thinning flake measures less than 6.3 mm along its longest axis, placing it within Size Grade 6 (see Appendix B); this piece has not been heat-treated.

Test Unit 4 (50-x-50 cm)

Level 2, 10-20 cm bs

This unit yielded two small tertiary flakes, one of which appears to be a bifacial thinning flake. Both are made of locally available chert, bear no evidence of heat-treating, and belong within Size Grade 5.

Test Unit 8 (50-x-50 cm)

Level 1, 0-10 cm bs

This test unit yielded a single flake fragment from its upper 10 cm. This piece is of chert and falls within Size Grade 5.

Historic Artifacts Collected

Only two historic artifacts were collected from site 34Cm-42. Both are modern lead-filled .45 caliber brass bullets and were probably deposited here during training exercises. One was collected from Unit 3, Level 1, the other from Unit 6, Level 1. Although live ammunition is not allowed in the immediate area, it seems likely that these bullets were fired into the site area from a nearby rifle or pistol range.

Faunal Material Collected

Two bone fragments were collected from Test Unit 3, Level 5 (40-50 cm bs). These pieces, which are extremely friable, were not diagnostic; it was possible to determine only that they had come from a vertebrate animal (see Appendix D). The bone fragments were lightly weathered and the angular break indicates that the bone was broken after the death of the animal. It is not possible to determine whether or not the bone is related to the artifactual material recovered from this site.

Summary

Given the data collected during this and previous site investigations, it is believed that the Archery Range II site served as a short-term base camp or hunting station in prehistoric times. The site is in fair to good condition, although erosion from numerous two-track roads and previous vegetation clearance have definitely impacted the site. Unfortunately, the assemblage lacks diagnostic artifacts, so no finer chronological distinction than "unknown prehistoric" can be made for its cultural affiliation. Further, the artifact assemblage is minimal. A consideration of these factors suggests that site 34Cm-42 is ineligible for inclusion in the NRHP; therefore, it is recommended neither for additional work nor preservation.

Site 34Cm-58 (Blue Beaver Site)

Prehistoric site 34Cm-58 lies on a knoll at the intersection of Blue Beaver Valley Road and an unnamed two-track dirt road, immediately east of Blue Beaver Creek; indeed, the western boundary of the site is a sharp, rocky bluff which drops abruptly some 3 m down to the creek. It occurs at an elevation of 408.5 m (1,350 ft) amsl; the soils are mapped as Granite Cobbly land (USDA, SCS 1970). The vegetation across the site area consists of a dense cover of mixed grasses and forbs, with occasional small mesquite and locust trees also present. Surface visibility at the time of the testing was effectively zero. A Moving Target Range lies on the other side of Blue Beaver Valley Road.

The Blue Beaver site was originally recorded by Shaeffer (1959, 1966) as a small prehistoric camp on a hillock; the Museum of the Great Plains (MGP) returned to the site in 1978 (Ferring 1978) and recorded an

extensive but light lithic scatter. It was re-recorded by GMI in 1990 (Peter and Weston 1993), although many fewer artifacts were identified at that time, possibly due to the MGP's collection activities. A broken arrow point collected from the site by GMI suggests a Plains Village occupation. No surface artifacts were observed at all when GMI returned to the site for test excavation on November 13, 1995.

Although site 34Cm-58 appears largely undisturbed by recent human activity, natural processes have removed much of the topsoil, leaving as little as 5 cm of soil overlying bedrock in some areas. Most of the 10 units excavated here were taken down to less than 25 cm due to the lack of topsoil, although one revealed that the southeastern side of the site retains as much as 50 cm of a very dark brown sandy loam (colluvium?). All the units were 50-x-50-cm squares, although the most productive, Unit 1, was expanded to 1-x-1 m; a total of .6775 m³ of soil was excavated during this process. In addition to a significant amount of lithic debitage, this excavation unit yielded the basal portion of an Archaic-age dart point, possibly of the Gary/Kent continuum of styles, as well as a second point base of an unidentified style. A uniface fragment was recovered from nearby Unit 8.

This was the most productive of the prehistoric sites excavated during the testing project. Six of the test units proved to be positive, yielding 75 prehistoric artifacts, and an isolated fragment of historic glass. The site area is estimated at 3,200 m² (Figure 9).

Prehistoric Artifacts Collected

A total of 75 lithic artifacts was collected during the test excavations at site 34Cm-58, including 52 flakes and flake fragments and 20 shatter fragments, as well as the aforementioned uniface fragment and two Archaic projectile point bases. These artifacts are discussed in detail below, by unit of origin. These data are reiterated in more detail in Appendix B.

Test Unit 1 (1-x-1 m)

Level 1, 0-10 cm bs

This unit produced a total of 47 artifacts; its initial abundance of cultural material was the reason it was chosen to be expanded from 50-x-50-cm to 1-x-1 m. Twenty-nine of these artifacts were collected from the first level. Most are simple debitage: there are six shatter fragments, 20 flakes, and a flake fragment. All six of the shatter are tertiary decortication; four fall into Size Grade 5. Of these, one is chert, one is quartz, and two are of Potter chert; one of the latter bears evidence of heat treatment. The two remaining shatter fragments fit into Size Grade 6; one is of chalcedony, and the other is of quartz.

The single flake fragment is a nonplatform-bearing remnant which was detached from a primary flake; it is of Potter chert and is within the Size Grade 5 size range. Of the 20 flakes, just one is primary; it is obviously burned, is of Potter chert, and falls into Size Grade 6. Four are secondary flakes: one Potter chert piece fits within Size Grade 2 (19-25 mm; see Appendix B), two are Size Grade 4 and are made of chert, and one quartz flake falls into Size Grade 4. The remaining 14 flakes are tertiary; this includes the six bifacial thinning flakes. Five of the tertiary flakes (four Potter chert, one conglomerate) fall within Size Grade 4, while six tertiary flakes fit within Size Grade 5: three are chert, one is quartz, and the rest are Potter chert. The last three flakes—one each of chalcedony, chert, and Potter chert—all fall within Size

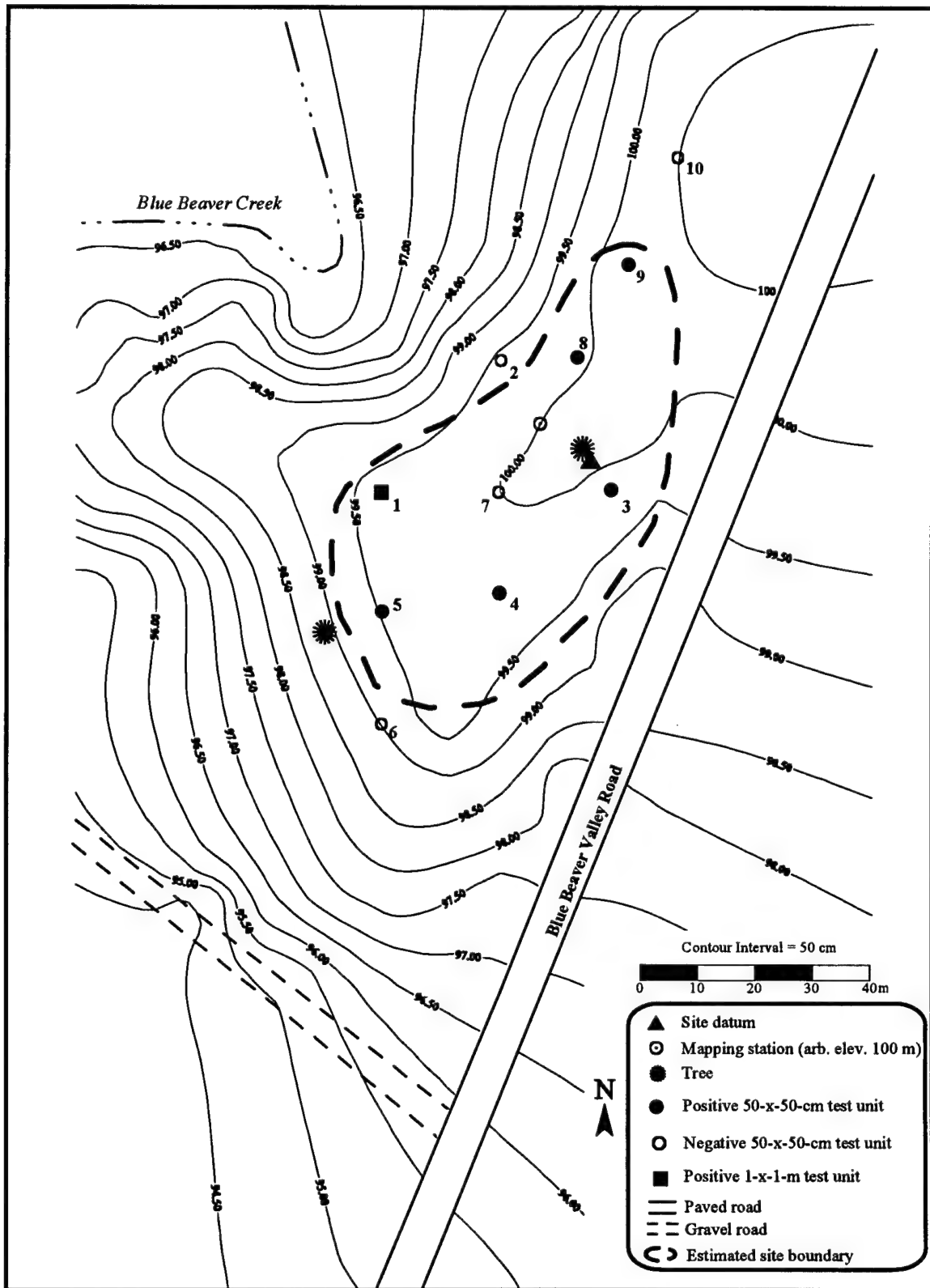


Figure 9. Plan map of the Blue Beaver site (34Cm-58).

Grade 6. Of all the tertiary flakes, only one of the Potter chert tertiary flakes in Size Grade 5 and one of its chert counterparts in Size Grade 6 have been heat-treated.

Two projectile point fragments were also collected from this excavation level. The first, which consists of most of the stem and part of the medial section of a Gary/Kent-like dart point, measures 40-x-24-x-7 mm (length-x-width-x-thickness) and weighs 7.4 grams; it is illustrated in Figure 10a. This point-style was used during both the Archaic and Plains Village periods. The other fragment consists of the basal portion of an expanding-stemmed point with an excurvate base (Figure 10b); this tool fragment measures 22-x-22-x-11 mm, has a weight of 5.7 g, and may also have been used as a scraper. This artifact exhibits the pottlidding which sometimes occurs during heat treatment of chert prior to flaking. The size and crude workmanship of both points indicate an origin within the Archaic period.

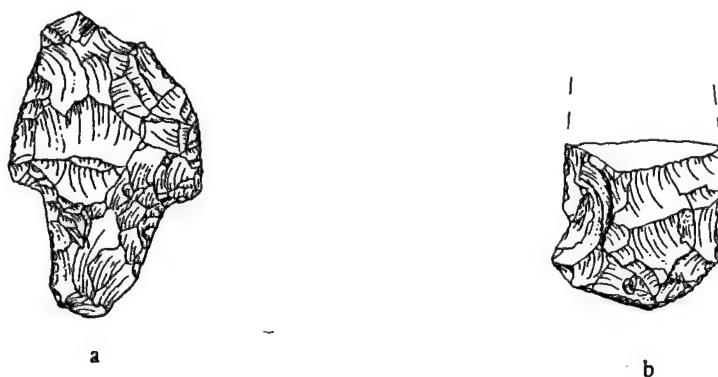


Figure 10. Prehistoric artifacts from site 34Cm-58: (a) basal fragment of a Gary/Kent-like dart point; (b) basal fragment of an unidentified Archaic dart point. (Scale 1:1)

Level 2, 10-20 cm bs

Eighteen artifacts, including six pieces of shatter, four unmodified flake fragments, eight unmodified flakes, and a utilized flake, were recovered from this excavation level. One piece of shatter is primary, is of Potter chert, and falls within Size Grade 5. The remainder lack cortex: two (one quartz, one conglomerate) are Size Grade 3 fragments, and three (one chert, one sandstone, and one Potter chert) fall within Size Grade 5. Of the six pieces of shatter, only the quartz and chert pieces are definitely unburned; the examination was inconclusive for the others. All four flake fragments fit within Size Grade 5. One is an andesite platform-bearing remnant, while two of the remaining three are made of chert; the exception is Potter chert. None have been heat-treated.

One of the eight flakes is a primary flake; it fits within Size Grade 3, is of Potter chert, and may have been burned or heat-treated. The single secondary flake belongs within Size Grade 5 and is chert. The five tertiary flakes all fit within Size Grade 5. The most notable of these is made of Alibates agatized dolomite, a material whose source area is located more than 100 km (60 mi) away in the Texas Panhandle. Three of the other tertiary flakes are made of chert, and one has been clearly heat-treated. The final flake is made of Potter chert and may have been heat-treated, although this remains uncertain. Also recovered was one primary flake which appears to have been utilized for scraping or cutting. This artifact is made of a waxy chalcedony and belongs within Size Grade 4. It does not appear to have been heat-treated.

Test Unit 3 (50-x-50 cm)

Level 1, 0-10 cm bs

Only one artifact was collected from the uppermost level of this excavation unit: a tiny tertiary flake fragment made of chert. This artifact, which has not been heat-treated, fits within Size Grade 6.

Level 2, 10-20 cm bs

Five artifacts were recovered from this excavation level. Three are flake fragments; two are angular shatter. Two flake fragments are secondary; one fits within Size Grade 5, the other in Size Grade 6. The third flake fragment is a primary decortication fragment made of chert and falls into Size Grade 5. Both shatter fragments are tertiary and are made of chert; one falls into Size Grade 5, the other into Size Grade 6. The latter may have been heat-treated.

Level 3, 20-30 cm bs

The single artifact collected from this excavation level is a small secondary chert flake which falls into Size Grade 5. It does not appear to have been heat-treated or otherwise burned.

Test Unit 4 (50-x-50 cm)

Level 2, 10-20 cm bs

This excavation level yielded five artifacts: three tertiary flakes, and two tertiary shatter fragments. One flake is a Size Grade 3 piece made from Potter chert; the other two are of ordinary chert, and fall into Size Grade 5. Both shatter fragments also fall within Size Grade 5 and are of quartz. None of the artifacts from this level bear any indication of burning or heat-treating.

Level 3, 20-30 cm bs

Three artifacts were recovered from this excavation level, including two tertiary flakes and a secondary shatter fragment. One of the flakes is of an igneous material that strongly resembles andesite; this artifact falls into Size Grade 3. The other flake is of Potter chert and fits within Size Grade 4, while the shatter fragment, also made of Potter chert, belongs in Size Grade 5. None of the artifacts from this excavation level show evidence of burning or heat treatment.

Level 4, 30-40 cm bs

The single artifact recovered from this excavation level is a tertiary flake made of quartz; it falls within Size Grade 5 and is unaltered.

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Test Unit 5 (50-x-50 cm)

Level 1, 0-10 cm bs

The first level of this test pit yielded three small debitage fragments—a flake, a flake fragment, and an angular shatter fragment—all of which are tertiary decortication pieces and fit within Size Grade 5 (see Appendix B). Of the three, only the flake fragment shows evidence of having been heated.

Level 2, 10-17 cm bs

This excavation level—which ended when bedrock was encountered—yielded two artifacts. The tertiary flake fragment is of Potter chert and fits within Size Grade 5; the second artifact, a tertiary chert flake, falls into Size Grade 5 and may have been heat-treated.

Test Unit 8 (50-x-50 cm)

Level 1, 0-10 cm bs

This level, like Test Unit 5 Level 2, terminated at exposed bedrock. Four chert artifacts were recovered: a tertiary flake, a tertiary flake fragment, a primary shatter fragment, and a uniface fragment. Both the flake and the uniface fragment show the discoloration characteristic of heat treating. The flake falls into Size Grade 5 (6.3-9.5 mm), while the other two debitage fragments belong in Size Grade 6 (<6.3 mm). The uniface fragment is apparently a small piece of the lateral edge of a unifacial tool; it measures 15-x-15-x-5 mm (length-x-width-x-thickness) and weighs 1.3 grams.

Test Unit 9 (50-x-50 cm)

Level 1, 0-18 cm bs

Three artifacts were recovered from this excavation level, including two tertiary flakes and a tertiary shatter fragment. Both flakes fit within Size Grade 5; one is of chert and may have been heated, while the other is quartz and is unaltered. The shatter fragment, which is smaller than 6.3 mm along its shorter axis, belongs within Size Grade 3 and is of conglomerate. It too may have been heat-treated.

Historic Artifact Collected

Only one historic artifact was collected during the test excavations at site 34Cm-58. This piece was recovered from Level 2 of Test Unit 4, in association with five prehistoric artifacts, and is considered intrusive. It is described as a manganese solarized glass bottle rim with a square bead lip; this sort of artifact was made only between 1880 and the 1920s. The artifact might have been deposited on the site as the result of a solitary dumping episode, or may have been dropped there by a farmer, hunter, or soldier.

Summary

The Blue Beaver site, 34Cm-58, appears to represent the remains of a short-term foraging camp. Previous examinations of the site yielded a wealth of prehistoric artifacts, many of which were then collected (see Ferring 1978). Although no surface artifacts and few subsurface artifacts were collected during the course of the test excavations chronicled herein, this site nonetheless produced the largest artifact assemblage of any prehistoric site in the sample ($n=75$). Two diagnostic projectile point fragments were recovered, and suggest an Archaic and/or Plains Village occupation; the only other tool identified, a uniface fragment, is nondiagnostic. The lithic debitage collected from the site indicates that bifacial reduction was taking place on site, at least to the level of crude biface production. Heat-treating of lithic material was common, but not universal, and a wide variety of tool stones, manufactured from various kinds of chert, conglomerate, andesite, quartz, and chalcedony, were employed.

Mitigating these observations are the following facts: (1) the assemblage, though highly variable material-wise, is relatively small and largely nondiagnostic; (2) the cultural deposits are thin and highly eroded; and (3) most of the artifacts have been collected away by previous researchers. Furthermore the site's contextual integrity, which has been compromised by the aforementioned erosion and previous surface collecting, has probably been impacted by the construction of Blue Beaver Road. For these reasons, the Blue Beaver site's research potential is believed to be quite limited. The site therefore is considered ineligible for inclusion in the NRHP and is not recommended for preservation.

Site 34Cm-107 (Beef Pens Site)

Site 34Cm-107 is located immediately east of the confluence of Beef and East Cache creeks, on the northwest corner of the Fort Sill Cantonment Area. It lies some 300 m west of Beef Creek Road, on the edge of a dense gallery forest dominated by mature oak and hackberry. Understory consists of mixed grasses, forbs, briars, sumac, and other shrubs; surface visibility is virtually zero. The site is mapped at an elevation of 340 m (1,115 ft) amsl; the surface soils are recorded as Port loam, a typical floodplain soil in the Fort Sill area (USDA, SCS 1970). The unconsolidated sediments extend to more than 100 cm below the surface at 34Cm-107; indeed, considering the results of the geoarcheological work performed during the current project and in previous studies (e.g., Hall 1978; Shanabrook 1993), the Holocene soils in this area can be expected to be on the order of 9 m (30 ft) thick. A borrow ditch or artificial channel cuts across the southwestern edge of the site, and debouches into East Cache Creek.

This site is thought to be the location of the Beef Issue Pens of the late 1800s, where beef rations were issued "on the hoof" to Apache prisoners of war and possibly reservation Comanche, Kiowa, or Apache. In 1959, Shaeffer recorded the site as a scatter of cow bone in the aforementioned borrow ditch and noted this as a "butchering site related to the Beef Issue Pens." It was re-recorded by GMI in 1990, at which time three positive shovel tests (of a total seven) yielded six large mammal bones, some of which were later identified as belonging to cow or bison (Peter and Weston 1993). GMI subsequently returned to the site for test excavations on December 2 and 3, 1995. The site has suffered obvious military disturbance, as it was necessary to remove an entire large pile of garbage and gravel from the west side of the site prior to testing, and at least one garbage pit was excavated on the site area. Further, beer and soda cans were scattered across the site, as were food tins and MRE (Meals, Ready to Eat) trash.

Prior to the excavations, a proton magnetometer survey was conducted across a large 20-x-20-m block and a connected 10-x-20-m block oriented north-south, both of which had been cleared the month before. Later, five backhoe trenches were excavated across the most obvious magnetometer anomalies (Figure 11). Two

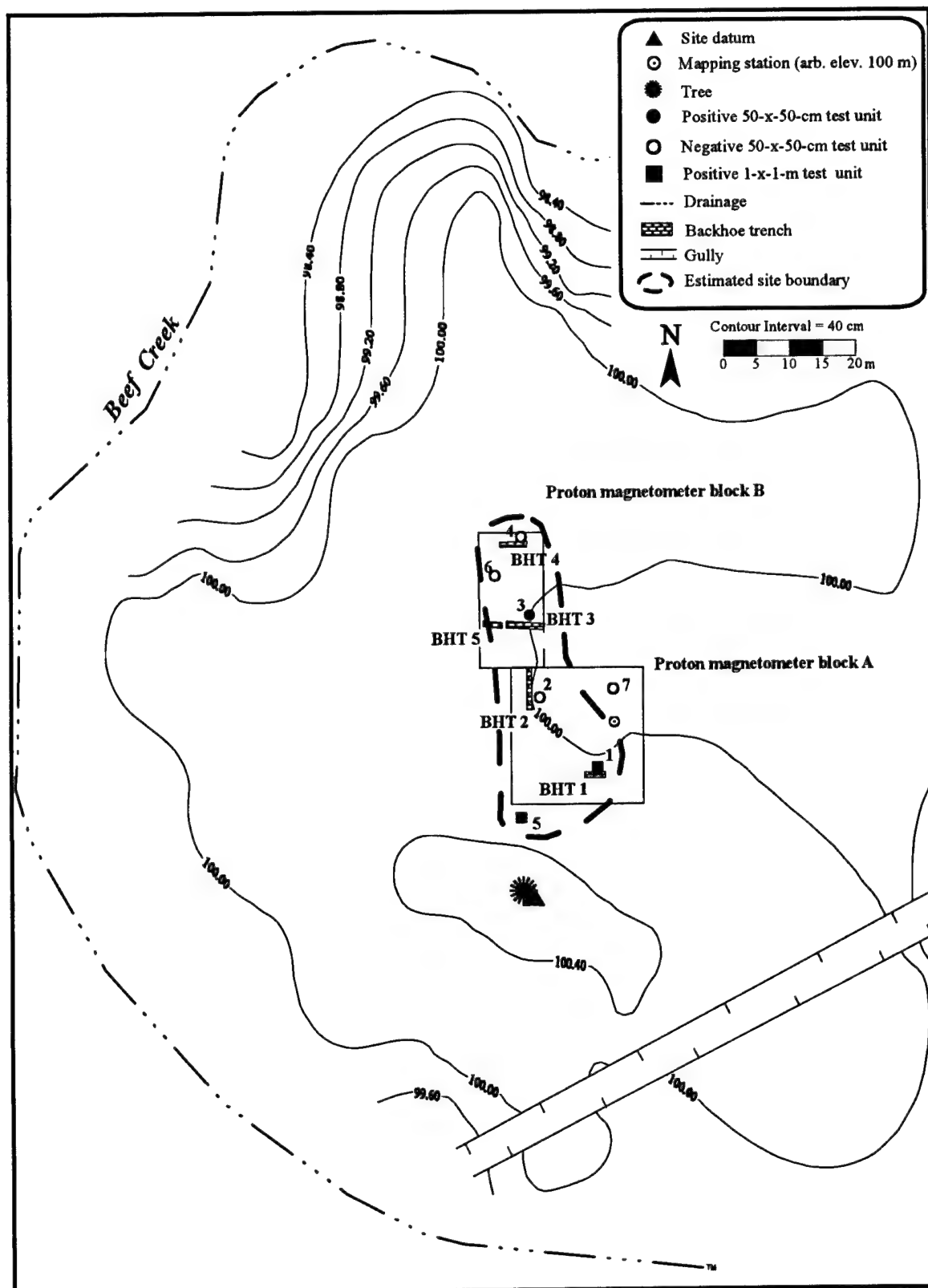


Figure 11. Plan map of the Beef Pens site (34Cm-107), showing the locations of the magnetometer blocks and associated backhoe trenches.

yielded bone fragments, including a rib bone which appears to have been sawed. However, no other cultural material was observed in these trenches, and it is believed that the magnetometer pulse was reflecting from the clay within the soil. Other trenches revealed a pit feature (apparently a military garbage pit mentioned above), several pieces of strap metal, and a buried pile of gravel. Each backhoe trench was spot-profiled prior to backfilling.

The soil at 34Cm-107 consists of a very dark brown clayey loam, varying from 40-60 cm deep, overlying a yellowish brown silt. The seven units excavated here—two 1-x-1-m units, four .5-x-.5-m units, and one .5-x-1-m unit—were excavated down into the silt. Four were excavated off the sides of the largest trenches, including one of the 1-x-1-m units, which was placed directly atop the location where two bone fragments had been collected in Backhoe Trench 1. A total of 2.1 m³ of soil was excavated in this manner. The findings were minimal: only a few iron nails, an apparent prehistoric shatter fragment, and 116 fragments of large mammal bone were collected. This material was found scattered between 15 and 49 cm bs, suggesting that the sediments have undergone significant reworking due to the extensive flooding for which East Cache and Beef creeks are known. The site is estimated to cover approximately 800 m² (see Figure 11), based on the distribution of the subsurface finds.

Faunal Material Collected

By far the most common type of cultural material at this site was animal bone. A total of 116 fragments of bone was collected from the Backhoe Trenches and the test units. It is broke down by unit of origin in the following section.

Backhoe Trench 1

Five bone fragments were collected from this unit. One, taken from approximately 15 cm below the surface, is the indeterminate fragment of a bone from a medium to large mammal, that is, a mammal at least the size of a dog or deer. This piece exhibits light weathering, suggesting that it was buried quickly, as well as spiral breakage. A spiral or "green-bone" fracture, in which the break curls around the curvature of the bone, can only occur when the bone is fresh and thus retains collagen. This suggests that this bone is the detritus of a butchering episode.

Four bones were collected from 44 cm below the surface in BHT 1. One is the distal end of an metapodial (ankle) bone from a horse, mule, or donkey; it also is lightly weathered and exhibits a spiral break, suggesting that the equine was butchered. The remaining three bone fragments are those of an indeterminate medium/large mammal and exhibit angular breaks, suggesting post-mortem breakage.

Backhoe Trench 2

The single bone collected from Backhoe Trench 2 came from a context approximately 49 cm bs. This piece is a fragment of a back rib, apparently that of a domestic pig (*Sus scrofa*), and has clearly been sawed with a band saw. This bone is the most obvious evidence that the site represents the remains of an animal butchering site.

Test Unit 1 (1-x-1 m)

Level 2, 10-20 cm

Sixty-two bone fragments were collected from this level; 38 are lightly weathered, indeterminate angular fragments that can be classified only as having originated within the vertebrate class. All the remaining pieces derive from one or more medium/large mammals: 22 are indeterminate medium/large mammal bone fragments which exhibit light weathering and angular breakage. One piece is markedly weathered, indicating a long exposure at the surface, and also exhibits angular breakage; the last bone fragment is spirally broken, and lightly weathered. These ecofacts were found in association with a cut nail.

Level 3, 20-30 cm bs

The single ecofact collected from this excavation level is an indeterminate fragment of mammal bone deriving from a medium/large animal. It is lightly weathered, suggesting quick burial; its spiral fracture pattern indicates a green-bone fracture during butchering.

Test Unit 3 (50-x-50 cm)

Level 4, 30-40 cm bs

The single piece of faunal material collected from this excavation unit consists of a small, indeterminate bit of lightly weathered bone from a medium/large mammal. It exhibits angular breakage.

Test Unit 5 (1-x-1 m)

Level 1, 0-10 cm bs

One indeterminate bone fragment was collected from this excavation level. It exhibits both light weathering and spiral breakage.

Level 2, 10-20 cm bs

This level produced 43 bone fragments. Twenty-three of these, unfortunately, were so fragmentary that they were diagnostic only to the vertebrate class. Of the others, one is a lightly weathered, indeterminate large/very large mammal bone fragment with an angular break; 11 are indeterminate medium/large mammal bone fragments with light weathering and angular breaks; and six are lightly weathered, angularly broken cranial fragments from a medium/large mammal. Two pieces compare favorably with *Bos* or *Bison* (i.e., cow or bison), genres which are so closely related that they are difficult to tell apart at the skeletal level. One is the proximal/medial end of a right femur, while the other is a fragment of an axial or cervical vertebra. Both pieces exhibit light weathering and angular breaks.

Level 3, 20-30 cm bs

Three medium/large mammal bones were recovered from this excavation level. All three bear evidence of angular breakage and are lightly weathered.

Level 4, 30-40 cm bs

This level yielded one medium/large mammal bone fragment. It exhibits both spiral breakage and slight weathering.

Historic Artifacts Collected

Just four historic artifacts were recovered from 34Cm-107, despite the more extensive indications of historic occupation evidenced by the faunal materials. All were nails: one, a cut nail dating from the period 1840-1900, was collected from the second level (10-20 cm bs) of Test Unit 1 (one of two 1-x-1-m units). The remaining artifacts, all from the second level of 1-x-1-m Test Unit 5, included two wire nails (post-1890) and a corrugated nail of uncertain temporal affiliation.

Prehistoric Artifact Collected

The single prehistoric artifact collected from the Beef Pens site is a lithic shatter fragment. This piece, which was collected from Test Unit 5, Level 2 (10-20 cm bs), falls into Size Grade 5, is of chert and has not been heat-treated or burned. Although there is no question of its origin, it seems likely that this piece is in secondary context, since it overlies much of the historic material.

Archival Research

The site is located in the northeast quarter of Section 5, Township 2 North, Range 11 West, and may be associated with the processing of beef after issue to either the Apache prisoners of war or to Indians living on the Kiowa, Comanche, and Apache Reservation. Other butchering sites in the vicinity include 34Cm-106, an isolated find consisting of bison or bovine bones exposed in a bank of East Cache Creek about 100 yards (91 m) north of Hoyle Bridge (Shaeffer 1959:116) and 34Cm-108, where crockery and bones were found in an area noted to be "in [the] general area of [the] Beef Corral" (Shaeffer 1961:1). This site is about 700 meters north of 34Cm-107.

Historian Wilber S. Nye (1969:345) has reported that nearby Beef Creek and Beef Flats were named because the Apache prisoners of war, who were held at Fort Sill between 1894 and 1913 (Wratten 1990:114, 121) and slaughtered cattle at these places, but no substantiation of this has been located.³ The Apache prisoners of war probably slaughtered fewer cattle than those of other tribal affiliations in the region; although members of this Apache group and the tribe as a whole were issued cattle by the government, these were used to build a herd rather than for immediate slaughter (Ball 1980:189, 191). The Apache prisoners of war

³ Alternately, Fort Sill tour guide notes say the name originated because cattle were pastured there, but the source of this information is not given (Spivey, informal interview 1996a).

did build a corral at Fort Sill (Superintendent 1911:n.p.), but the archival resources consulted included no mention that the corral was used to hold cattle for slaughter. Further research at the Fort Sill Museum Archives may prove otherwise or may show that the Apache prisoners of war occasionally slaughtered animals in this area. At present, however, it appears that if 34Cm-107 is associated with the slaughter of government-issued cattle, those cattle were probably issued to tribal groups other than the Apache prisoners of war.

Lawrie Tatum, who was in charge of the Kiowa Agency during the early 1870s, when the agency was located near Fort Sill, noted that beef rations were "issued alive, one or more head of cattle to a chief or his representative, who had 'beef Paper,' according to the number of families in his band" (Tatum 1899:n.p.). These issues would have been made to members of the Kiowa, Comanche, Apache, Wichita, Caddo, and other tribes. Tatum (1899:n.p.) stated that

[t]he beef was sometimes killed near the beef pen, a few miles from the agency, and carried on their ponies to the camps, and sometimes they were driven there to be butchered [Tatum 1899:n.p.].

Unfortunately, statements such as this do little to narrow the range of locations where government-issued beef was slaughtered, nor do they help locate the beef issue pens. Further descriptions of beef issue are available from several sources, including the 1890 census (USCO 1894:539) and the following—

During the beef issues the cattle stood in pens 12 hours before the stoughter [*sic*] and the Indians would inspect the cattle and make their selections. As soon as they were released from the pens, the bucks would chase them on horseback, shooting at them with shotguns, rifles, revolvers or arrows. After the animals were down the squaws would appear on the scene with their large knives. . . . When the squaws had finished cutting the meat, they would throw it in the back of a wagon on some hay, or if they were on horseback, they would place it on the horse's back, get upon the horse and leave [Murphy n.d.:4].

Further complicating the problem of locating pens or corrals is the possibility that there was more than one set. One oral history informant noted that the earliest rations, including beef, were issued from "the place where the old rock quarry was, near the depot"⁴ (Livingston 1937:331; Figure 12). Another writer (Nye 1969:99-102) indicates two agency warehouses may have been constructed on "the ridge immediately north of Quarry Hill" and that supplies were issued to Indians from tents, the location of which are not specified, prior to Tatum's arrival. Nye does not mention corrals in this passage. Other sources indicate a location farther south, near the stores that were located just south of the Fort Sill boundary during the late nineteenth century (Figure 13). A Comanche oral history informant stated that he remembered seeing, on trips between the confluence of the Deep Red and West Cache creeks and the Red Store, "a corral where that—station is now, somewhere there just north of that Yellow comanche [*sic*] Mission [probably at the location of the present-day Comanche Indian Mission; note that these two landmarks, *near* the depot and *near* the mission, include both of the possible locations of the beef issue pens]. Right there there used to be a corral there and looks like a house there too with it, that maybe where they butcher cows, and they give every Indian cow to kill . . ." (Chibitty 1967:15). Oral history informant Ethel Howry also described the location of some beef issue pens:

Then they give us beef. And this tall square top house you see up there, on the hill east of town, well down in the valley, there they have big corrals built. . . . [When they let the cattle out of the corrals]

⁴ The depot, which no longer exists, was almost due west of the rock quarry and a short distance south of Sheridan Road (Spivey, informal interview 1996b).

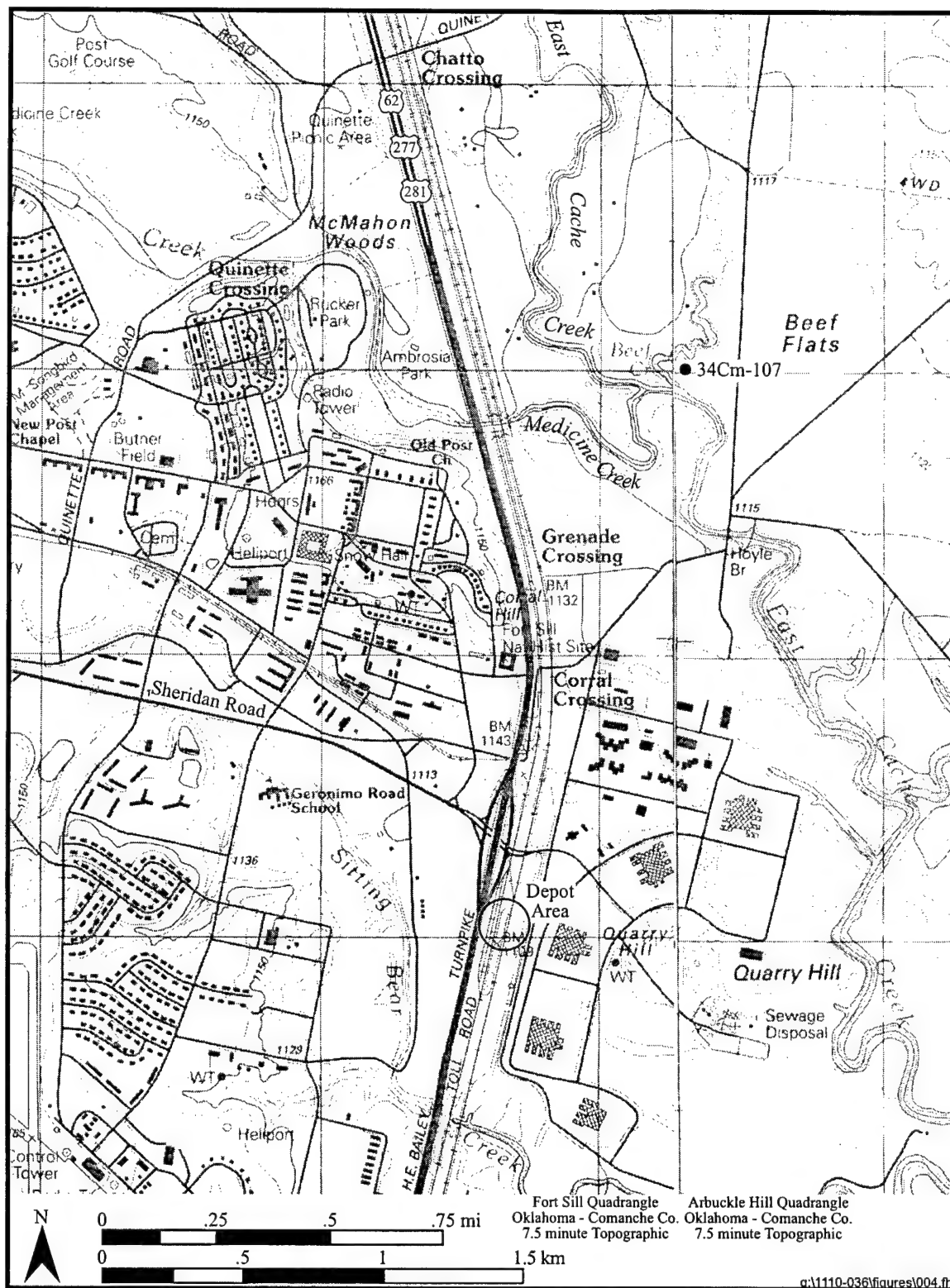


Figure 12. The possible location of the earliest beef issues at Fort Sill (from United States Department of the Interior, Geological Survey 1975). These were reported to have taken place near the quarry and the old depot, more than a mile (1.6 km) south of 34Cm-107.

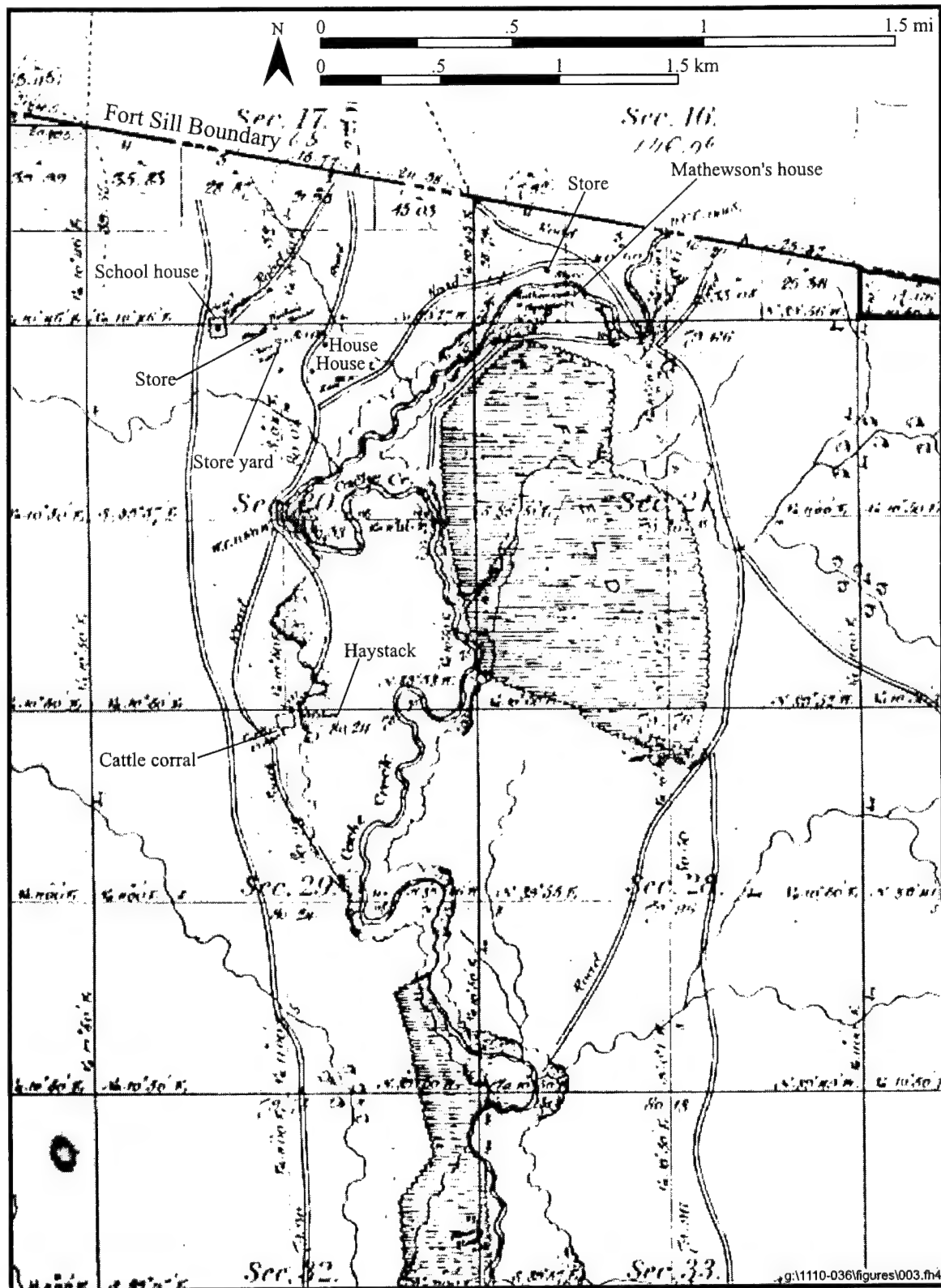


Figure 13. Possible location of beef issues at Fort Sill (from United States General Land Office 1874). The cattle corral may have been where the cattle was kept prior to being issued.

all these boys that belong to that community [that was allotted the cattle] will go for that cow. . . . They give it a wild chase in those days. Boy, they chase them all over this place, and kill them. They butcher them and they cut so much beef for each family [Howry 1967:13].

Early maps of the area now occupied by the Comanche Indian Mission and the Kiowa Indian Hospital can be associated with these descriptions and provide further evidence that the southernmost location may have been the primary site of the beef issues. An 1874 General Land Office map shows a cattle corral on the north side of Section 29, Township 2 North, Range 11 West (see Figure 13), and a 1924 map shows a slaughterhouse about one mile (1.6 kilometers) to the northeast. No pens or corrals are shown on the 1924 map, but it does not cover the area in which the 1874 map indicated the corral was located. Also, the issuance of rations was discontinued shortly after the turn of the century (Buntin 1931:154), so any pens or corrals that may have been close to the slaughterhouse may have been removed by 1924. Unfortunately, the General Land Office did not conduct surveys of the property within the Fort Sill boundary, so there are no details illustrated in Section 5, where 34Cm-107 is located.

In all likelihood, there were no pens or corrals for holding ration cattle at the junction of Beef and East Cache creeks. There may have been beef issue pens, a corral, or possibly warehouses or tents in the general vicinity prior to the arrival of Lawrie Tatum and the establishment of the Kiowa Agency in 1869 (Tatum 1899:n.p.); these structures were located near the rock quarry (see Figure 12). Cattle may have been run from this site to the vicinity of 34Cm-107 after they were released to the Indians, but that would entail cattle and riders crossing East Cache Creek.

Beef issue corrals or pens were almost certainly located in the vicinity of the old Kiowa Agency (in Section 20, Township 2 North, Range 11 West), where a greater amount of cut bone has been found (Spivey, informal interview 1996a) or slightly south of there, in Section 29, where a corral is indicated on the 1874 General Land Office survey map. The distance of both these locations from 34Cm-107 makes it highly unlikely butchering activities at the site were directly associated with the issuance of beef rations at these locations.

There are also other possible explanations for the cut bone at 34Cm-107. Dairy herds have been grazed in this general area at various times (Spivey, informal interview 1996a) and it is possible that there were occasional slaughters of these animals. Also, a wide variety of items have long been dumped in this area (Spivey, informal interview 1996a). The location of such a limited amount of faunal debris could indicate the location of a small trash disposal area.

Summary

A great deal of controversy exists concerning the location of Fort Sill's historic Beef Issue Pens, as chronicled in the preceding section, so much so that their precise historic location remains indeterminate. Given the condition of the records, even the correct location of site 34Cm-107, as originally defined by Shaeffer (1966), is uncertain. The following excerpt from GMI's initial survey report (Peter and Weston 1993:87) somewhat illustrates this confusion:

The reported location of the Beef Issue Pens is east of East Cache Creek. Judd Redfield filed a report with the state of Oklahoma in 1975 under the same site number, 34Cm-107. This later report states that the beef issue pens were west, not east, of East Cache Creek. Redfield based this conclusion on historic photographs, maps, and written documentation. Further complicating the issue, Shaeffer reported that the site is 200 yards north of Hoyle Bridge but gives a UTM location that is 2000 feet north of the

bridge. The 1975 survey by the Museum of the Great Plains failed to locate any material at the site of the Beef Issue Pens (Spivey et al. 1977:343) and the 1977 survey made no attempt to locate the beef issue pens (Ferring 1978:300-301).

To further cloud the issue, a stone monument at the edge of an open field approximately 600 m (1,968 ft) south of site 34Cm-107, on the other side of Hoyle Bridge and East Cache Creek, marks the "official" location of the historic Beef Issue Pens.

The current archeological and archival research indicates that the site 34Cm-107 tested by GMI in 1995 is very unlikely to have been the location of the Beef Issue Pens themselves. It may represent the remains of a butchering site located nearby; alternately, and perhaps more likely given the limited amount of bone, it may be a specialized dumping area for animal processing refuse. The site contains identifiable remains derived not only from a cow or bison, but also from horse, mule, or donkey and, probably, a pig. The apparent pig rib bone recovered from the site bears clear marks of sawing, and many of the bones (including that of the equine) are spirally fractured, suggesting that the bone was broken while still fresh. Although there are natural processes which can mimic such breaks, they most commonly occur during the deliberate processing of animals for food. Historic artifacts found in association with the animal bone suggest an occupation in the late nineteenth/early twentieth century.

Whatever the case may be, the site's research potential and significance must be considered limited. The cultural assemblage collected from the site is meager, despite the amount of dirt moved and the level of effort put into the excavations, and offers little research potential. Further, the cultural deposits show clear evidence of having been repeatedly reworked by flooding and other natural processes; the vertical dispersal of the faunal material (15-49 cm bs), which may represent a single butchering or dumping episode, is ample evidence of this, as is the presence of a prehistoric artifact above much of the historic material. Finally, repeated military use of the area, including excavation of foxholes and garbage pits, has impacted the site extensively. For all these reasons, site 34Cm-107 is recommended as ineligible for inclusion in the NRHP, and is not recommended for further work.

Site 34Cm-235 (High Terrace Site)

Site 34Cm-235 lies on a high terrace immediately north of Medicine Creek's confluence with Ketch Creek, at an elevation of approximately 357 m (1,170 ft) amsl. The soils are mapped as Port loam (USDA, SCS 1970); vegetation includes a thick cover of mixed grasses and forbs, allowing near-zero surface visibility. An agricultural field, most recently used to grow hay, borders the site on the north, and a grove of small trees marks the northwest corner of the site.

The High Terrace site was originally recorded by the Museum of the Great Plains in 1977, as a fairly light artifact scatter located along 320 m of an east-west trending two-track on the terrace above Medicine Creek (Ferring 1978). Most of the artifactual material was apparently scattered by vehicular traffic, slopewash, and other natural actions; later re-examination of the site by GMI in 1990 narrowed the artifact-producing area to a small rectangular tract, measuring perhaps 25 m EW and 12 m NS, bordered on the north by the east-west two-track and the hayfield, on the east by a small eroded two-track leading down to the creek, and on the south by the steep terrace scarp (Peter and Weston 1993). A GMI crew returned to the site for test excavations on December 3-4, 1995. Obvious site impacts observed at that time included cultivation of the agricultural field and erosion of the two roads. As it currently exists, the site covers approximately 900 m² (Figure 14).

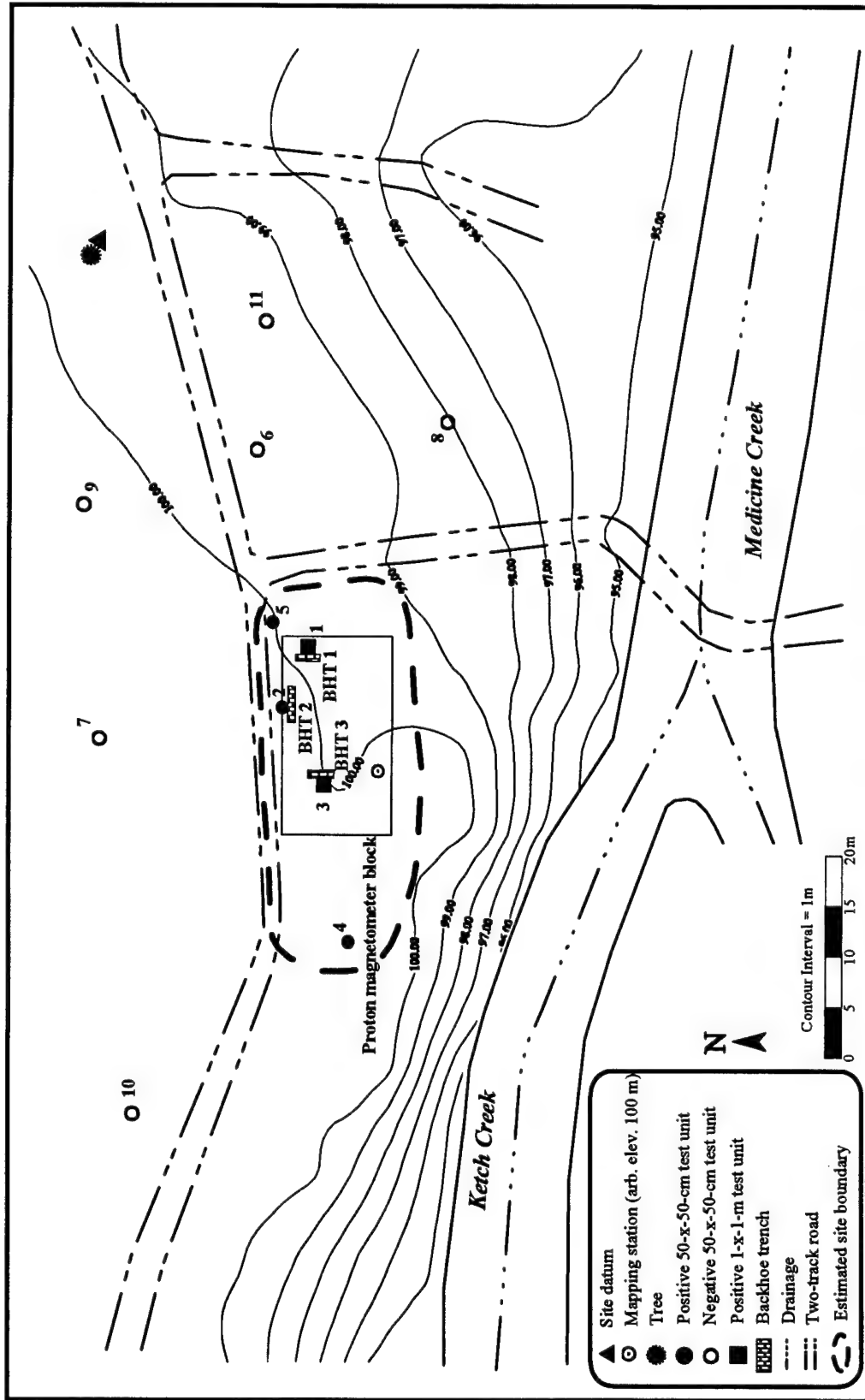


Figure 14. Plan map of the High Terrace site (34Cm-235), showing the locations of the proton magnetometer blocks and associated backhoe trenches.

Shortly before the site was excavated, a proton magnetometer survey was conducted across a 10-x-20-m block oriented east-west within the artifact-producing area. Later, three backhoe trenches were excavated across the most obvious magnetometer anomalies. One yielded bits of coal slag and metal strapping. The others yielded nothing; in these cases, it is believed that the magnetometer pulse was reflecting from a layer of dense clay about 70 cm beneath the surface. Each of the backhoe trenches was spot-profiled prior to backfilling.

The soils at this site consist of a very dark brown, very clayey loam, approximately 60-70 cm deep, overlying a very dense and firm clay of the same color. Eleven units were excavated here: nine 50-x-50-cm units, and two 1-x-1-m units. All but one of these units was taken to 40 cm bs; the remaining unit was taken to 50 cm bs. One 50-x-50-cm unit and two 1-x-1-m units were excavated off the edges of the backhoe trenches, one unit per trench. The total amount of sediment excavated and screened was 1.625 m³. Despite this level of effort, only 20 subsurface artifacts were collected: 13 flakes, three shatter fragments, three fire-cracked rocks and one iron mule shoe. In addition, a large chunk of what appears to be ground stone (possibly a piece of a mano or metate) was collected from the surface of the north-south road leading down to the creeks.

Prehistoric Artifacts Collected

Nineteen prehistoric artifacts were collected from 34Cm-235. One was collected from the surface; 18 were recovered from subsurface contexts.

Surface Collection

The single artifact collected from the surface came from the eroded bed of the north-south trending two-track road leading down to the Medicine/Ketch confluence. This piece, which is of ground sandstone, appears to be a small fragment of a mano or metate; it measures 117-x-63-x-62 mm, and weighs approximately 611.1 g. It is illustrated in Figure 15.

Test Unit 1 (1-x-1 m)

Level 1, 0-10 cm bs

Four pieces of cultural material were collected from this unit: three fragments of fire-cracked rock and one tertiary flake. The fire-cracked rock, which appears to be made of a conglomerate or rhyolitic material, has a total weight of 247.2 g. The flake is of Potter chert and belongs in Size Grade 4 (9.5-12.5 mm). It exhibits no indication of having been burned or heat-treated.

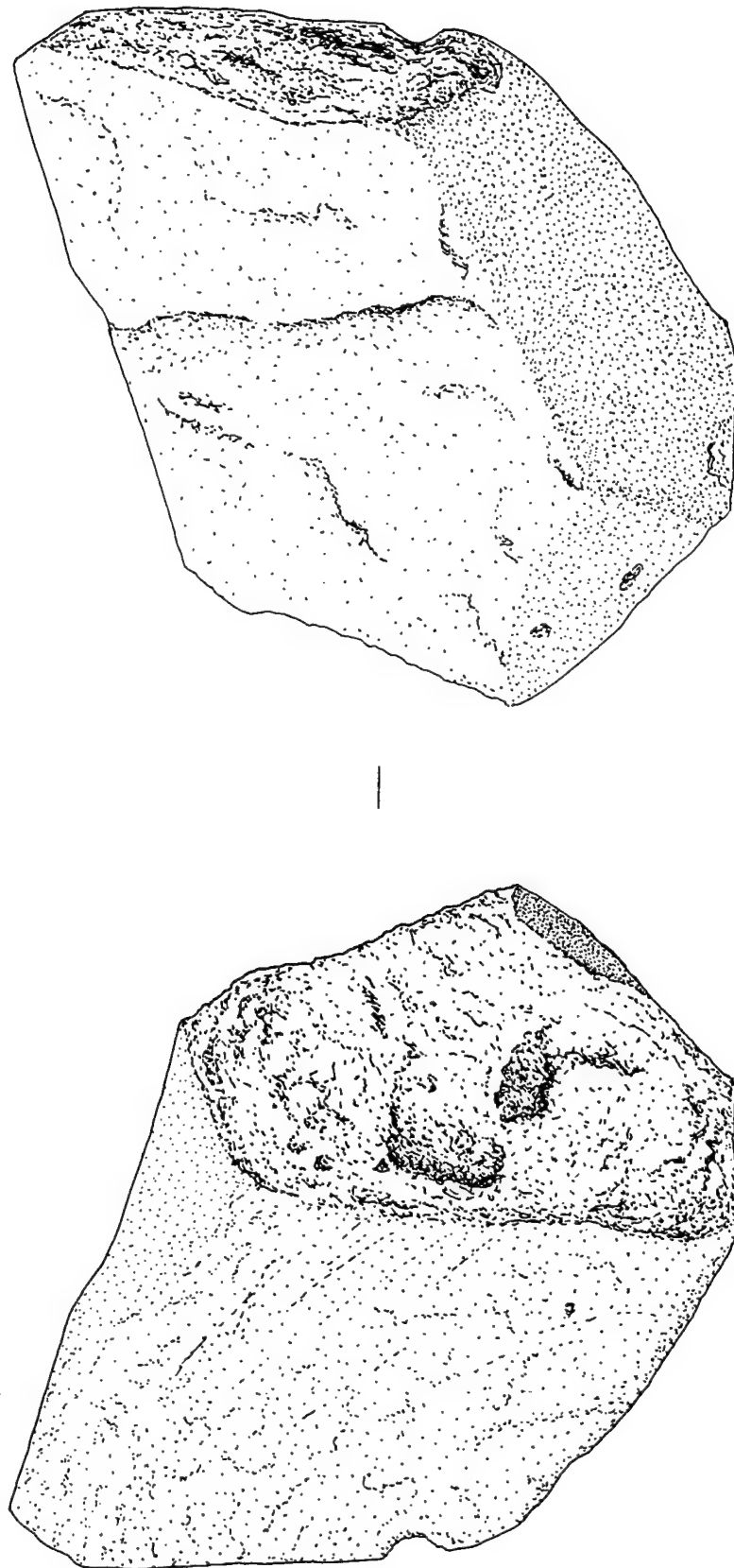


Figure 15. A ground stone artifact collected from the surface at site 34Cm-235. (Scale 1:1)

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Test Unit 2 (50-x-50 cm)

Level 1, 0-10 cm bs

This unit yielded only one artifact, from its uppermost level. This small primary decortication flake is of chalcedony, and fits within Size Grade 5; it has not been heat-treated.

Test Unit 3 (1-x-1 m)

Level 1, 0-10 cm bs

Test Unit 3 was the most productive on site 34Cm-235. This excavation unit yielded eight artifacts, including five flakes and three shatter fragments. Four of the flakes are tertiary and include two made of andesite (one falling into Size Grade 3, the other into Size Grade 6), one made of Potter chert (Size Grade 5), and one made of chert (Size Grade 6); the latter appears to be a bifacial thinning flake, judging from the tiny flake scars on its dorsal surface. It also bears the reddish discoloration characteristic of heating. The secondary flake, which falls within Size Grade 5, is of Potter chert and has not been heated. All three shatter fragments are made of Potter chert and are unaltered; one falls into Size Grade 3, the others into Size Grade 5.

Level 2, 10-20 cm bs

The five flakes recovered from this excavation level include a primary flake, two secondary flakes, and two tertiary flakes. All are made of Potter chert. Both secondary flakes belong within Size Grade 3 and may have been thermally altered; the same is true of the primary flake, which fits into Size Grade 5. Of the tertiary flakes, one is a bifacial thinning flake of Size Grade 5; the other falls into Size Grade 6. Neither has been heat-treated nor burned.

Test Unit 4 (50-x-50 cm)

Level 2, 10-20 cm bs

This unit produced a single artifact, a large tertiary flake fitting into Size Grade 2 (19-25 mm; see Appendix B). The flake, which is of andesite or a similar material, is unaltered.

Historic Artifact Collected

The single historic artifact collected from site 34Cm-235 was recovered from Level 2 of Test Unit 9, a 50-x-50-cm unit placed north of the site, midway between the east-west two-track and the hayfield. This artifact, a well-worn iron mule shoe, was collected from 11 cm bs and is suspected to have been thrown off by a plow-mule during cultivation of the agricultural field at some time in the past. Although the artifact is nondiagnostic, it was probably lost prior to World War II.

Summary

Site 34Cm-235, the High Terrace site, most likely represents the remains of a small ephemeral camp, situated so as to take advantage of the available water supply; the presence of a ground stone fragment suggests that it was more than just a hunting or chipping station, although lithic reduction, mostly of Potter chert, was obviously occurring. The ground stone fragment suggests an Archaic or later presence, but the limited cultural remains observed and the general lack of diagnostic artifacts make a finer distinction of the site's cultural affiliation impossible at this time. Although contextual integrity appears to be good across most of the site area, 34Cm-235 has suffered a significant amount of disturbance. The cultivation of the agricultural field to the north has obliterated any traces of the site which may have existed there, and continued erosion of both roads has also had an impact on the site, as evidenced by the observation of artifacts within the roadbeds. These factors, in conjunction with the general scarcity of materials at the site, limit its research potential. Therefore, the High Terrace site is recommended as ineligible for inclusion in the NRHP and is not recommended for preservation.

Site 34Cm-239 (Rocky Twins Site)

This multicomponent prehistoric/historic site lies on a terrace above Medicine Creek, south of Rocky Twins Hill, at an elevation of some 372 m (1,220 ft) amsl. The soils are mapped as Lawton loam, 1-3 percent slopes (USDA, SCS 1970). Most of the site is lightly wooded in oak, hickory, and juniper, with an understory of forbs, grasses, and shrubs. A sinuous two-track dirt road, proceeding south off Rocky Twins Road, passes generally north-south through the site; the site extends perhaps 460 m along this road. The site has been impacted not only by erosion of the road, but also by extensive military activity, which has resulted in some subsurface disturbance and which has left trash scattered across the site. Shell craters, bomb fuses and fragments, and abundant shrapnel attest to the fact that this area was at one time used for artillery practice. Between the undergrowth and a dense leaf mat, surface visibility is minimal across most of the site; along the eroding roadbed, however, visibility is excellent, approaching 100 percent.

The site was originally recorded by the Museum of the Great Plains in 1977 as a dense lithic artifact scatter (Ferring 1978); a few historic artifacts were identified on the southernmost extension of the site. More than 1,200 artifacts were collected by the MGP, and two 1-x-1-m test units were excavated. GMI relocated the site in 1991 (Peter and Weston 1993); at that time, the lithic scatter was said to be "still quite dense." This was not the case in November 1995, when a GMI crew returned to the site for test excavations. The lithic scatter was observed to be somewhat meager, possibly due to previous overcollection, military use of the area, and continued erosion.

During the course of these examinations, 17 excavation units (15 50-x-50-cm units and two 1-x-1-m units) were dug along the edges of the road, and 23 backhoe scrapes were performed in an attempt to identify buried prehistoric features. The results were disappointing. The soils at this site consist of a dark brown silt loam just 10-30 cm thick overlying a reddish clay loam or clay; .97 m³ of sediment was excavated during testing. Only 42 subsurface artifacts were collected, including six historic artifacts and 36 lithics. From the surface was collected a basal portion of a projectile point, the distal portion of a second projectile point, a small unifacial end scraper, one mussel shell fragment, and two crossmendable whiteware fragments. The scrapes unearthed two small fragments of glass and a fragment of whiteware in association with one another (Backhoe Scrape 21: not collected), as well as two intact bombshells and a good deal of shrapnel. In addition, a small charcoal stain was identified in Backhoe Scrape 9. Based on the results of the scrapes, excavations, and surface examinations, site 34Cm-239 is estimated to measure 457 m NW-SE by 46 m NE-SW, covering some 21,000 m² (Figure 16).

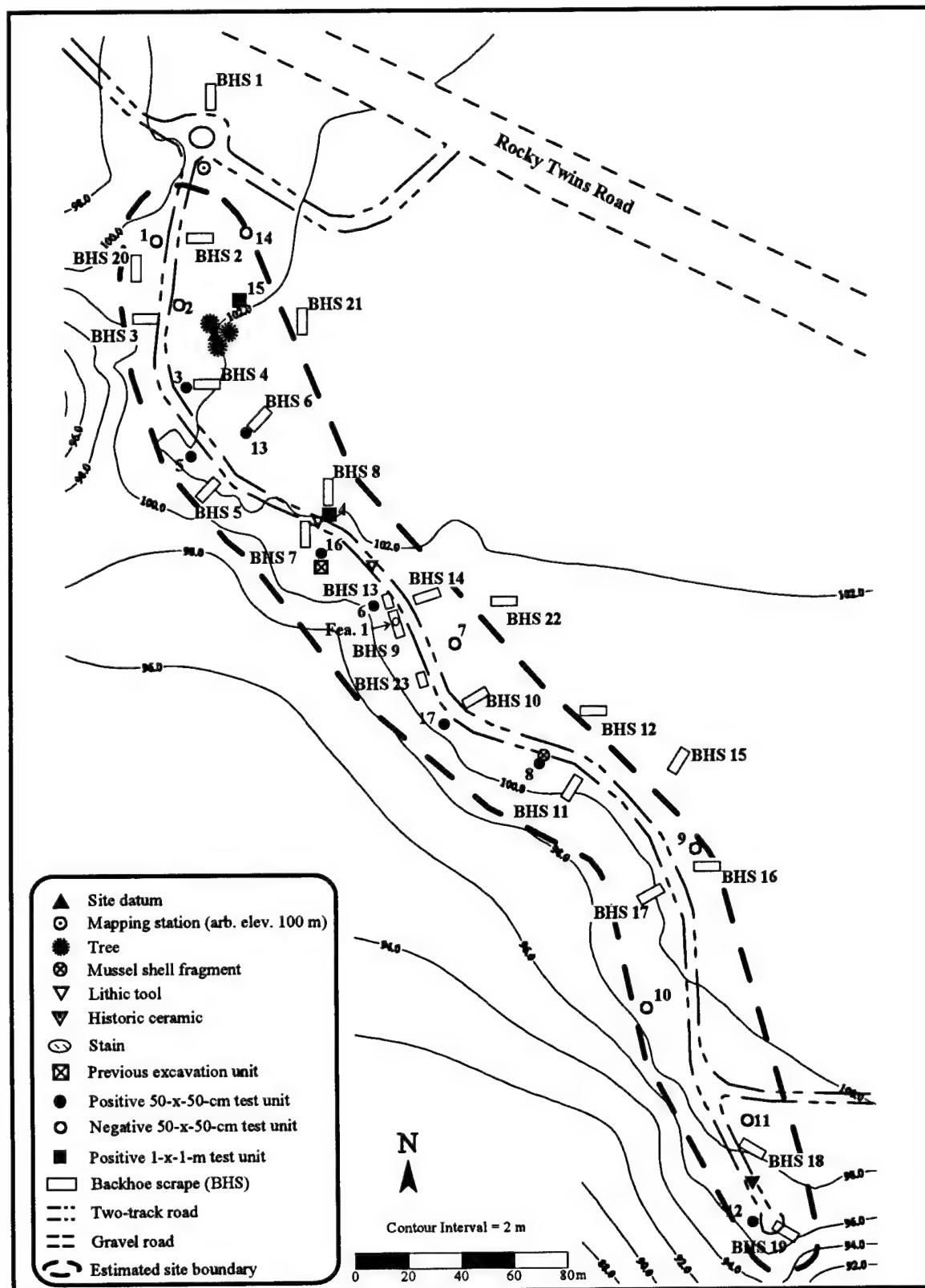


Figure 16. Plan map of the Rocky Twins site (34Cm-239).

Possible Protohistoric Feature

One feature, possibly human in origin, was observed 11 cm bs within Backhoe Scrape 9 (Figure 17). This feature, a small oval charcoal stain, measured 21 cm NS by 17 cm EW. It proved to be quite shallow, extending only to 16 cm bs; it is possible that the upper portion was scraped away. It lay within a reddish clay loam (5YR 4/4), and was suspected at the time of the survey to be a root burn; the project area has been burned over multiple times. Nevertheless, the feature was bisected and the fill from the excavated south half collected for later analysis. Radiocarbon assay yielded an age of 340 ± 50 BP (A.D. 1450-1660, calibrated, 2 sigma; Beta-98995) for the fill material, suggesting a possible Protohistoric origin for the feature. However, it remains uncertain whether this feature is of true human origin, or is a simple root burn; the latter explanation is suspected to be the case, as no cultural materials were identified in or around the feature. After the sample was taken, the remains of the feature were covered with plastic and carefully buried.

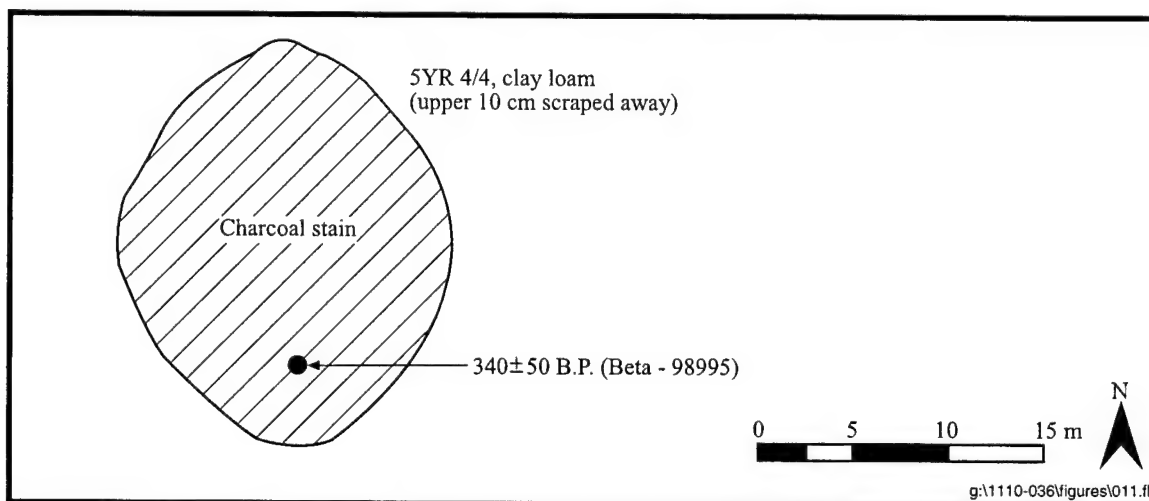


Figure 17. Plan view of Feature 1 within Backhoe Scrape 9 at site 34Cm-239.

Prehistoric Artifacts Collected

Thirty-six prehistoric lithic artifacts were collected from site 34Cm-239. Three of these were collected from the surface; the remainder were recovered from a total of nine test units.

Surface Collection

Although a variety of debitage and other lithic material was observed on the surface at the Rocky Twins site, only three surface artifacts were collected; all were tools or tool fragments found on or near the road. The first was the stem from a projectile point, most likely a dart point. This piece, which is made from a yellow chert, is characterized by straight sides and an excurvate base; it measures 15-x-16-x-4 mm and has a weight of 1.6 g (Figure 18a). This piece may have been burned or heat-treated; the analysis was indeterminate.

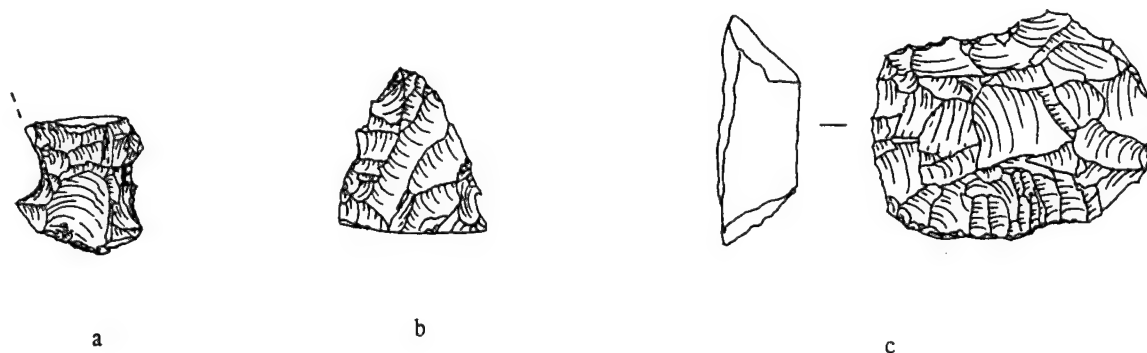


Figure 18. Prehistoric artifacts collected from the surface at site 34Cm-239: (a) projectile point base; (b) projectile point tip; (c) unifacial end scraper (burned). (Scale 1:1)

A second projectile point fragment, this one from a different point made from a different material, was found nearby (see Figure 18b). This distal fragment exhibits fine workmanship and is of a caramel-colored chert. It measures 21-x-20-x-5 mm, and weighs 1.8 g. The final surface artifact collected is a small unifacial end scraper, made of an unremarkable gray chert. This piece has unquestionably been burned: it bears potlidding on its ventral face. It measures 32-x-27-x-10 mm, weighs 13 g, and appears to be complete (see Figure 18c).

Test Unit 3 (50-x-50 cm)

Level 2, 10-20 cm bs

This excavation level, the only one that produced any cultural material in Test Unit 1, yielded four Potter chert artifacts. Three are unmodified tertiary flakes; all fall into Size Grade 5. The remaining artifact, a secondary shatter fragment, belongs within Size Grade 4.

Test Unit 4 (1-x-1 m)

Level 1, 0-10 cm bs

This excavation level produced five artifacts, including three tertiary flakes, a tertiary flake fragment, and an end scraper; none of these pieces has been either burned or heat-treated. One of the flakes is of Potter chert and falls into Size Grade 3. Another flake, as well as the flake fragment, are made of chert; both fit within Size Grade 4. The third flake, which is of chalcedony, is a Size Grade 6 piece. The end scraper was crafted on a flake of red Alibates agatized dolomite. This finely worked piece is complete and measures 32-x-21-x-5 mm; it weighs 4 g. This artifact is illustrated in Figure 19.

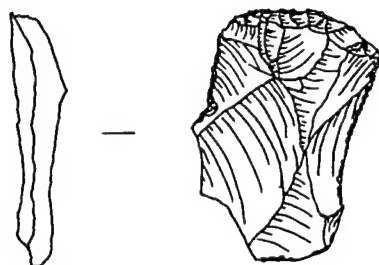


Figure 19. Alibates end scraper collected from Test Unit 4 at site 34Cm-239. (Scale 1:1)

Test Unit 5 (50-x-50 cm)

Level 1, 0-10 cm bs

Six Potter chert artifacts were collected from this excavation level. These include four tertiary flakes, a tertiary flake fragment, and an indeterminate biface fragment. Of these, only the flake fragment and biface exhibit limited evidence of having been thermally altered (although this is equivocal). One flake falls into Size Grade 3, another into Size Grade 5. Two flakes (one apparently a bifacial thinning flake) and the flake fragment fit into Size Grade 6. The biface fragment, which apparently was broken off the lateral edge of an indeterminate tool, measures 12-x-14-x-6 mm and weighs 1 g.

Level 2, 10-20 cm bs

Eight artifacts were recovered from this excavation level. Among them were two flake fragments, four flakes, and two shatter. One of the flake fragments (both of which fall into Size Grade 5) is secondary and is of Potter chert; the other is tertiary and is of chert. The latter bears evidence suggesting it was thermally altered. All four flakes are tertiary; two are made of Potter chert (one Size Grade 5, the other Size Grade 6), one is of chalcedony (Size Grade 6), and the last is of chert (Size Grade 6). All were bifacial thinning flakes, with the exception of the smaller Potter chert flake. Both of the shatter fragments fit into Size Grade 5. One appears to be made of andesite, while the other is quartzite.

Test Unit 6 (50-x-50 cm)

Level 1, 0-10 cm bs

This test unit yielded one artifact. This piece takes the form of a Size Grade 5 tertiary flake which has been heat-treated. It is of Potter chert.

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Test Unit 8 (50-x-50 cm)

Level 1, 0-10 cm bs

The single artifact collected from this excavation level is also a Potter chert tertiary flake. It falls into Size Grade 4 and has not been thermally altered.

Test Unit 13 (50-x-50 cm)

Level 1, 0-10 cm bs

Two artifacts were collected from this excavation level: both are unaltered chert tertiary decortication flakes. The larger of the two (Size Grade 5) is a bifacial thinning flake; the smaller (Size Grade 6) is not.

Level 2, 10-20 cm bs

This excavation level yielded another unaltered bifacial thinning flake falling into Size Grade 5; however, this one is of Potter chert.

Test Unit 15 (1-x-1 m)

Level 1, 0-10 cm bs

Two artifacts were recovered from this unit. The larger is a tertiary decortication flake made of Potter chert; it fits into Size Grade 4. The other artifact is a Size Grade 5, tertiary bifacial thinning flake, this one made of chert. Neither piece has been thermally altered.

Test Unit 16 (50-x-50 cm)

Level 1, 0-10 cm bs

This unit yielded a total of three unmodified tertiary decortication flakes. One is of andesite, while the others are made of Potter chert. The andesite piece falls into Size Grade 3; the others fall into Size Grade 5.

Test Unit 17 (50-x-50 cm)

Level 1, 0-10 cm bs

Two artifacts were collected from this excavation level; both fit into Size Grade 6. One is a chert bifacial thinning flake; it bears no evidence of thermal alteration, unlike the second piece, an angular shatter fragment made of conglomerate material. The analysis was inconclusive for the latter artifact.

Level 2, 10-20 cm bs

One unmodified tertiary flake fragment was recovered from this excavation level. This piece, which is of chert, fits into Size Grade 4.

Historic Artifacts Collected

Nine historic artifacts were collected at site 34Cm-239. Two pieces were collected from the surface; the remainder were recovered from two test units.

Surface Collection

The two historic artifacts collected from the surface are crossmendable whiteware fragments with a polychrome floral over-the-glaze decalcomania design. Both are rim fragments. This type of whiteware was manufactured between 1895 and 1950.

Test Unit 6 (50-x-50 cm)

Level 1, 0-10 cm bs

One artifact was collected from this excavation level. This was a small leather rivet made of brass or copper.

Test Unit 12 (50-x-50 cm)

Level 1, 0-10 cm bs

This unit was placed within the southern portion of the site, where historic artifacts had previously been collected and observed. Three historic artifacts were collected from this excavation level. Among them is a post-1890 tenpenny wire nail; an unidentifiable fragment of cast iron; and a fragment of amber/brown bottle glass made after 1910.

Level 2, 10-20 cm bs

An additional three artifacts were collected from this excavation level. They are a small unidentifiable fragment of cast iron; a post-1910 amber/brown bottle glass fragment (possibly from the same bottle as the overlying piece); and an aqua bottle glass fragment made between 1870 and 1940.

Faunal Materials Collected

Two fragments of faunal material were collected from this site. One is a fresh-water mussel shell fragment of the family Uniatidae; a more specific determination is not possible given the fragmentary nature of the specimen. This piece is probably the remains of food refuse, given the height of this terrace above Medicine Creek, although it is uncertain whether it is related to the historic or prehistoric occupation. This piece was collected from the surface near the south end of the site. The other ecofact is a small fragment of mammal bone collected from the first level of Test Unit 4; it was found in association with several flakes and an Alibates end scraper. This indeterminate fragment came from a medium/large animal, is lightly weathered, and exhibits spiral fracturing. It may also be food refuse; it seems more likely to be associated with the prehistoric occupation at the Rocky Twins site, given its association.

Summary

Site 34Cm-239, the Rocky Twins site, represents the remains of a multicomponent site with both historic and prehistoric occupations. Unfortunately, the site is currently in poor condition. The historic component is in particularly bad shape; historic artifacts are scattered indiscriminately across the southern end of the site. While it remains possible that there was a historic homestead or other occupation here at one time, no architectural remains have ever been discovered; it is suspected that the historic artifacts were left here during one or more dumping episodes after the turn of the century. The prehistoric component is in slightly better shape, but erosion and previous research—especially surface collecting—have severely compromised the site's contextual integrity. Considering its size and complexity, this occupation probably represents the remains of a base camp or village site. The few tools that were collected suggest an Archaic origin, possibly Late Archaic, given the small size of the dart point fragments. Finally, one possible protohistoric feature (see Figure 17) was uncovered by backhoe scraping, but the human origin of this feature remains in doubt.

The Rocky Twins site is extremely disturbed; this and the current scarcity of materials limit this site's research potential. For these reasons, it is not considered eligible for inclusion in the NRHP. No further testing is recommended for site 34Cm-239.

Site 34Cm-315 (Geological Blowout Site)

This multicomponent site lies west of Blue Beaver Creek and immediately north of the Fort Sill South Boundary Road, within an apparently recent geological blowout where the wind has removed all the overlying topsoil down to sterile subsoil and bedrock. A small north-south trending drainage cuts through the blowout and is probably responsible for initiating the eolian erosion that resulted in the blowout. Vegetation across the site area consists of mixed grasses and forbs. The site is mapped within Eroded clayey land (USDA, SCS 1970) at an elevation of 387 m (1,270 ft) amsl. Surface visibility is high within the blowout, especially in those areas where the soil has been scoured away down to the sandstone bedrock.

This site was originally identified by the Museum of the Great Plains in 1978 and is recorded as including large quantities of crude quartzite flakes and tested cobbles (Ferring 1978). MGP personnel collected 209 artifacts. The site was re-recorded by GMI in 1990 as an extensive but light lithic scatter; many fewer artifacts were observed at that time. The site was, at that time, believed to represent the remains of a lithic procurement site, i.e., a site where lithic material was collected for stone tool production (Peter and Weston 1993).

In November 1995, a GMI crew returned to the site to conduct test excavations. Prior to unit excavation, six backhoe trenches were excavated on the east and west margins of the site in order to understand better the geological history and nature of the site. Two of the trenches were "skip-trenches," consisting of two and four discontinuous segments each, so in actuality 10 separate units were excavated. Bedrock was encountered between 30 and 60 cm bs in all these units; it was overlain by a reddish brown silty loam. Spot profiles were taken of each trench.

Eight excavation units were excavated here, all off the backhoe trenches; these included one 1-x-1-m unit, and seven 50-x-50-cm units. Some 1.4 m³ of soil was moved during this process. No subsurface artifacts were observed or collected. However, a thin but extensive scatter of artifacts was observed on the surface, and from this was collected a large quartzite flake; a small hammerstone; a core; and a variety of historic artifacts from two small historic artifact concentrations eroding out along the southwest margin of the site, including solarized manganese glass, a zinc canning jar lid, milk glass lid liner fragments, thick crockery fragments, and metal artifacts. Based on the testing and the observation of cultural material, the site area is estimated at 10,400 m² (208 m NE-SW by 50 m NW-SE; Figure 20).

Prehistoric Artifacts Collected

Only three prehistoric artifacts were collected from the surface at 34Cm-315: a large flake, a core, and a hammerstone. The flake is a primary decortication piece made of poor-grade Potter chert; it fits into Size Grade 1 (>25 mm; see Appendix B). The core, a discoidal specimen, is of the same material; it measures 82-x-55-x-44 mm and weighs 162.1 g. The hammerstone is subprolate in shape and bears evidence of battering on one end. It is made from a purplish, medium-grained quartzite and measures 47-x-42-x-29 mm, with a weight of 86.9 g (Figure 21). None of these artifacts have been thermally altered.

Historic Artifacts Collected

Historic artifacts were collected from two concentrations eroding out at the surface within the southwest quarter of the site. This historic component had not been previously recorded, possibly because it had not been visible previously. Both concentrations (Historic Artifact Concentrations A and B) are thought to be the remains of historic dumping episodes. The cultural material, which seems to represent normal household trash, was probably dumped into existing gullies and covered over. Artifacts collected from each historic artifact concentration are discussed below.

Historic Artifact Concentration A

Ten artifacts were collected from this artifact concentration: a zinc fruit jar lid (1870-1930), a tin can fragment (post-1900), two crossmendable stoneware fragments with a natural clay slipped interior/exterior (1875-1900), and five glass artifacts. The glass fragments include a manganese/solarized glass bottle, which

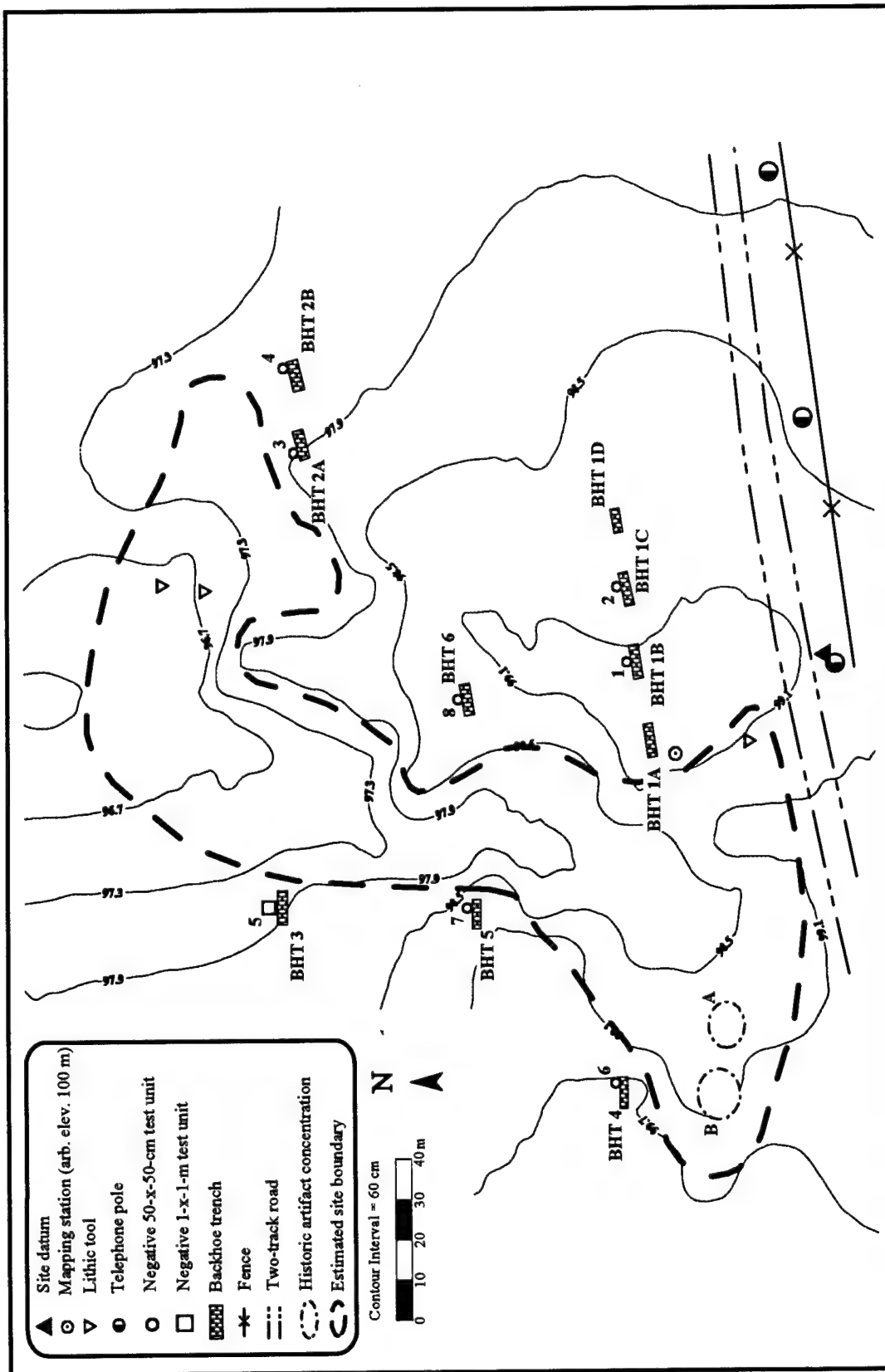


Figure 20. Plan map of the Geological Blowout site (34Cm-315), showing the locations of the backhoe trenches.

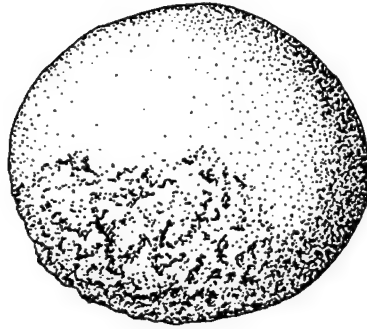


Figure 21. Hammerstone collected from the surface at site 34Cm-315. (Scale 1:1)

is mostly intact (1880-1920s); an amber/brown bottle base made by Owens Glass Company, probably part of an early beer bottle (1910-1940); the top of an aqua fruit canning jar fragment with a continuously threaded lip (1905-1935); and fragments of two "GENUINE BOYD" milk glass inset caps for zinc canning jar lids (1900-1950).

Historic Artifact Concentration B

Eight artifacts were collected from this concentration. The five glass artifacts include two crossmendable amber/brown bottle fragments which together form most of a long-neck beer bottle (1910-1940; Figure 22); one fragment of a "GENUINE BOYD" milk glass lid liner (1900-1950; Figure 23a); and two pieces of pressed manganese/solarized table glass (1880-1920s), one of which is some sort of glass pedestal, possibly for a lamp or compote. Two Bristol slipped interior/exterior stoneware fragments were also collected. One has a "4" printed on it, indicating the gallon capacity of the vessel from which it came (post-1900); the other piece bears a stenciled maker's mark with a maple leaf and is otherwise printed with "WESTERN STONEWARE COMPANY," a manufacturer located in Monmouth, Illinois (see Figure 23c). This piece postdates 1906. The final artifact collected from this concentration is an undecorated ironware fragment (1840-1910) which probably represents a thick-walled cup.

Summary

Considering the findings during this and previous site examinations, 34Cm-315 is believed to be the remains of a lithic procurement area destroyed by natural erosional processes, which were probably initiated by the development of the natural drainage which runs through the center of the site. Its cultural affiliation remains unknown. The area also served as a dumping ground during historic times, apparently in the late nineteenth/early twentieth century. Because of its poor contextual integrity and minimal cultural assemblage, site 34Cm-315 is recommended as ineligible for inclusion on the NRHP. No further work is recommended.

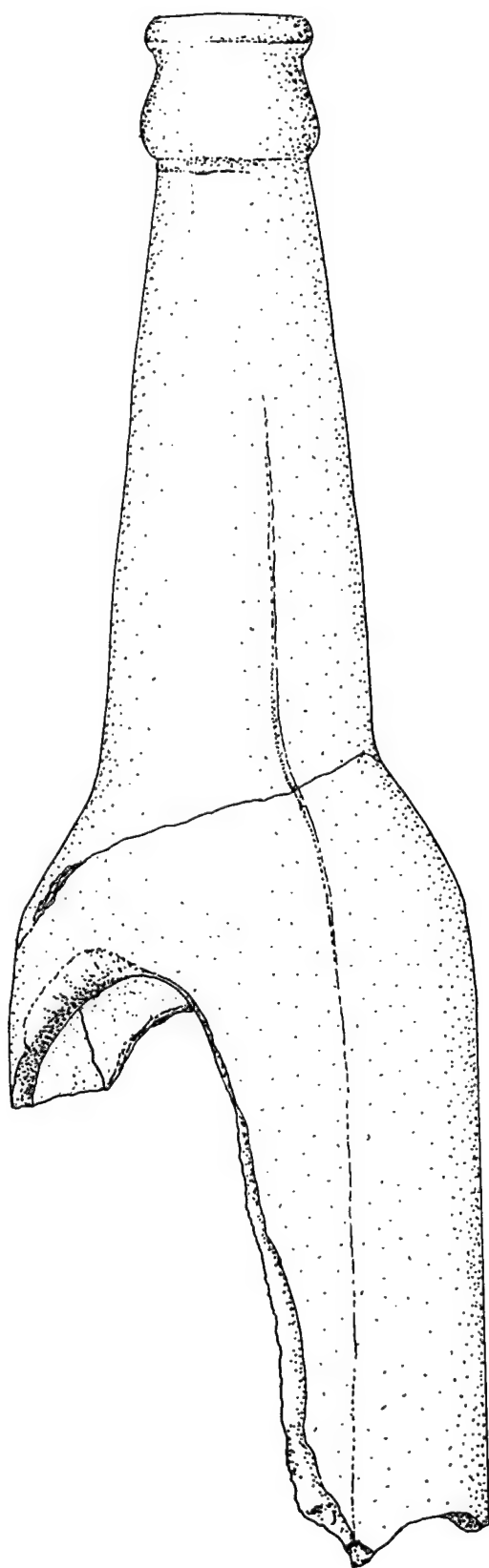


Figure 22. Amber/brown glass bottle fragment from site 34Cm-315. (Scale 1:1)

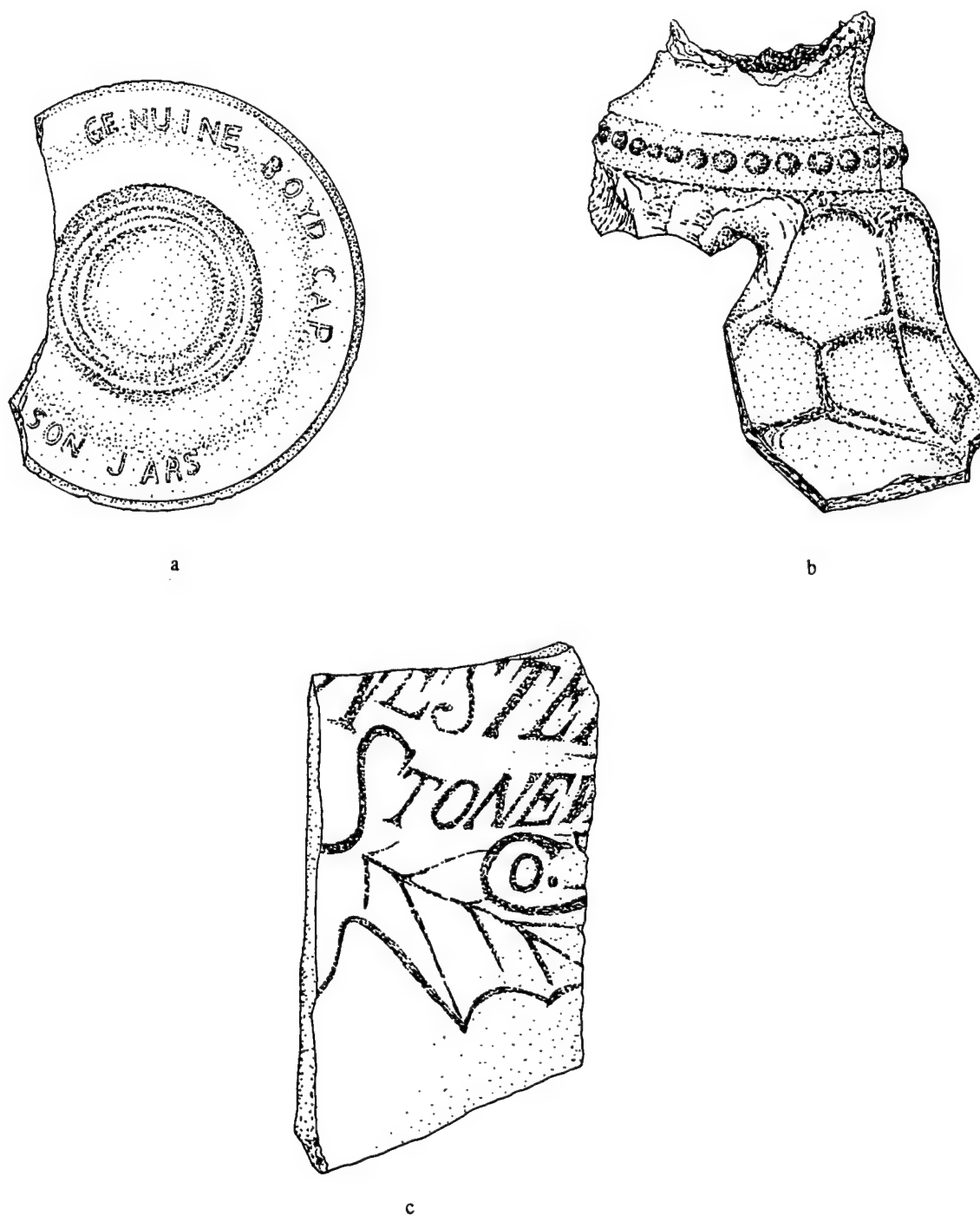


Figure 23. Historic artifacts from site 34Cm-315: (a) Boyd milk glass canning jar lid liner; (b) pressed manganese/solarized glass pedestal; and (c) decorated stoneware fragment from Western Stoneware Company. (Scale 1:1)

Site 34Cm-401 (George Wratten Site)

This historic site is located on the eastern edge of the Fort Sill Cantonment Area, on Wastewater Road 90 m east of its intersection with Francis Street. It lies some 15 m north of the road, in a gently sloping area only 100 m southwest of the historic Quarry Hill, which provided high-quality limestone for the construction of many of the first buildings at Fort Sill. The soils are mapped as Lawton loam, 1-3 percent slopes (USDA, SCS 1970); elevation is approximately 338 m (1,110 ft) amsl. Vegetation across the site consists of short grasses, rendering the surface visibility near zero.

This site is recorded as the location of the home of George Wratten, long-time interpreter for the Apache prisoners of war who were interned on the fort from 1894-1913. GMI originally recorded the site in 1990 (Peter and Weston 1993); at that time, a 40-cm section of a potential stone foundation complete with mortar fragments was discovered within a small slit trench, and several fragments of historic glass were identified.

In October 1995, an electrical resistivity survey was conducted across a large 10-x-20-m block, oriented east-west, which included the location of the previously identified wall fragment. Slit trenches and other units were later excavated across several of the documented anomalies; one (Test Unit 1) revealed a thick layer of gravel, which apparently had reflected the magnetometer pulse, and is interpreted as a possible buried driveway or road. Another yielded a trench full of modern garbage no more than five years old (including a Miller Genuine Draft beer bottle, complete with label), at the bottom of which was a small communications cable, which cut across the reported location of the foundation. The stone wall has apparently been destroyed by this and other recent military activity. Many of the other units revealed gravel strewn throughout the upper 20 cm of the soil. Although the expected feature was not rediscovered, an old concrete foundation was found perhaps 100 m east of the site area. This feature is believed to be related to past quarrying activities rather than to Wratten's homestead.

The soil at this site consists of a very dark brown loam. The nine units excavated here—two .5-x-2-m units, two 1-x-.5-m units, a 1-x-1-m unit, and four 50-x-50-cm units—were excavated to depths 25-40 cm bs; 2.105 m³ of sediment was excavated and screened. The findings were minimal: only 19 artifacts and three coal fragments were collected. After the hand excavations were complete, a backhoe operator scraped several trenches across the site in a further attempt to locate the reported foundation. However, this activity was futile. Based on present findings, the site area is estimated at 690 m² (23 m NS by 30 m EW; Figure 24).

Historic Artifacts Collected

Test Unit 1 (.5-x-2 m)

Level 1, 0-10 cm bs

Although a thick layer of limestone gravel appears about 8-12 cm below the surface in this unit and probably represents the remains of a subsurface walkway or road, only three artifacts were collected. Two are small iron rods of indeterminate origin; the other is a post-1930 copper flashlight bulb base.

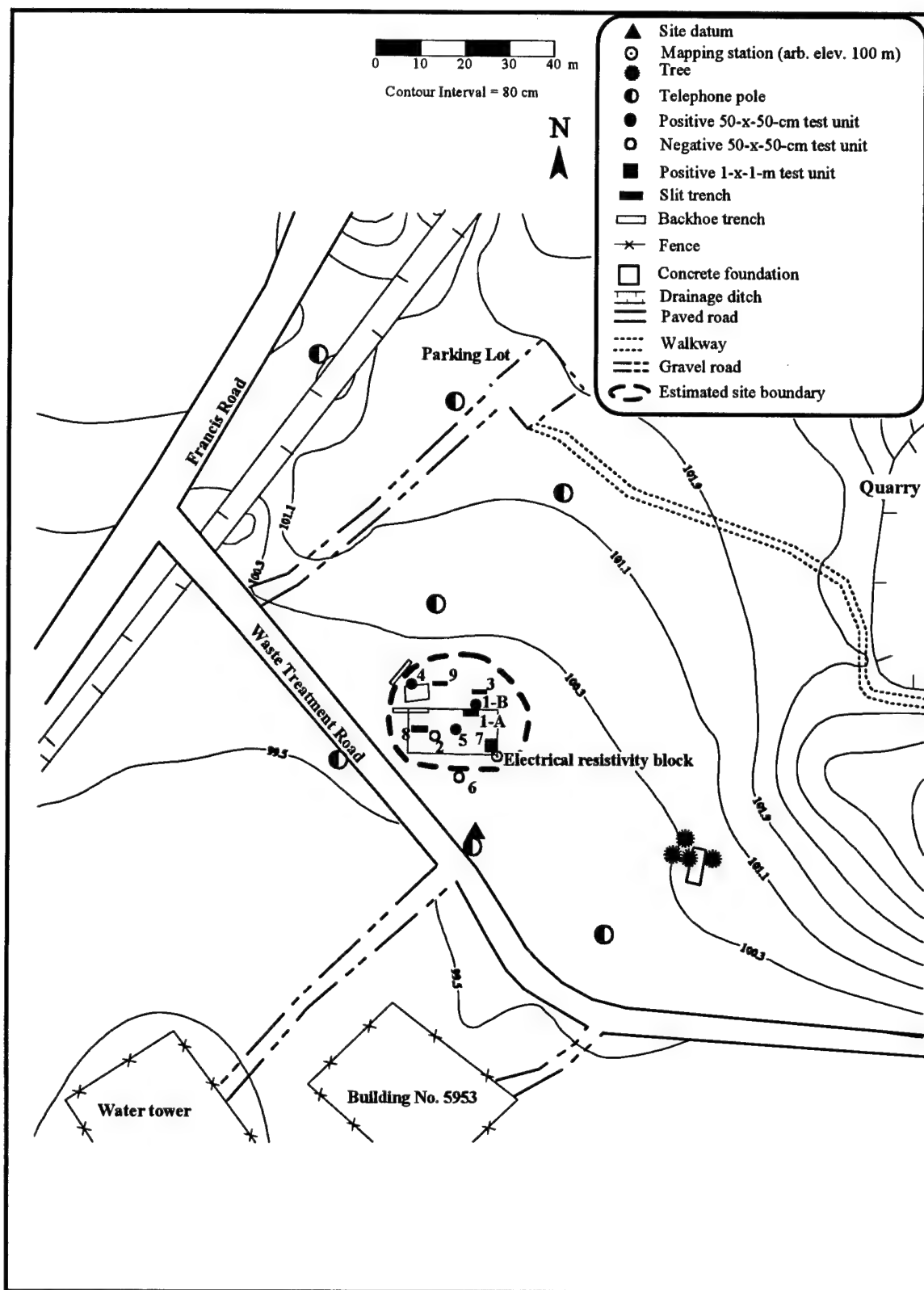


Figure 24. Plan map of the George Wratten site (34Cm-401), showing the location of the electrical resistivity block and associated backhoe scrapes.

1995 Cultural Resources Site Testing and Geological Investigations: Fort Sill Military Reservation

Test Unit 3 (.5-x-1 m)

Level 1, 0-10 cm bs

This excavation level yielded two artifacts: a sixteenpenny wire nail (post-1880) and a modern aluminum Coca-Cola soda can (post-1975). The presence of this modern artifact further indicates the disturbed nature of this site.

Level 2, 10-20 cm bs

Two metal bolts were collected from this excavation level. Both are extremely corroded, but one clearly exhibits a hexagonal head and is 3 cm long.

Test Unit 4 (50-x-50 cm)

Level 1, 0-10 cm bs

This excavation unit yielded one artifact: a large hexagonal iron nut.

Test Unit 5 (50-x-50 cm)

Level 1, 0-10 cm bs

This excavation level produced a single artifact, a fragment of light green bottle glass (possibly modern) which postdates 1910.

Level 2, 10-20 cm bs

Six artifacts and two fragments of coal were collected from this excavation level. These include two thin fragments of iron, possibly from a tin can; a thin fragment of copper; two aqua window glass fragments of indeterminate age; and a clear bottle glass fragment postdating 1910.

Test Unit 7 (1-x-1 m)

Level 1, 0-10 cm bs

Three small iron pipe fragments were recovered from this excavation level. These are probably fragments of a sewer pipe.

Level 2, 10-20 cm bs

One fragment of coal and two artifacts were collected from this excavation level. One is a .45 caliber centerfire cartridge marked with "U.S.C. CO./8," and is essentially modern. The other is an aqua window glass fragment of indeterminate age.

Archival Research

Site 34Cm-401 is located in the southeast quarter of Section 8, Township 2 North, Range 11 West, and probably represents the location of outbuildings associated with the residence of George Wratten (occasionally spelled Ratten), the interpreter for the Apache prisoners of war (Peter and Weston 1993:108-112). Nearby site 34Cm-402 is the likely location of the actual Wratten home (Peter and Weston 1993:112).

George M. Wratten ran away from home when he was approximately 16 years of age. He fled Florence, Arizona, and migrated to the San Carlos Reservation (near Globe, Arizona) with a group of people who built a general store there. While working as a clerk in the store, Wratten learned to speak fluently the three dialects of Apache spoken in the area (Wratten 1990:91-92). Wratten became a Chief of Scouts for the U.S. Army in 1881, reporting for duty at Fort Stanton, New Mexico, in October of that year (Wratten 1990:94). He was transferred to Fort Bowie, Arizona, and served as Chief of Scouts under Lieutenant Charles B. Gatewood during the lieutenant's 1885 journey into Mexico to deliver a message from General Nelson A. Miles asking Geronimo and his band to surrender (Wratten 1990:96-97). Wratten served as interpreter during the negotiations that resulted in the surrender of the Apache band (Wratten 1990:98) and accompanied that group of 38 and another 68 "undesirables" first to San Antonio, Texas, then on to Fort Pickens, Florida (Wratten 1990:98-103).

In 1888, after Wratten moved with the Apache prisoners from Florida to Mount Vernon Barracks, Alabama, he married an Apache woman now known only as Annie (Wratten 1990:105-106). They separated sometime before 1894 (Wratten 1990:116), when the high death rate among the Native Americans at Mount Vernon prompted the Army to move the Apache prisoners of war to Fort Sill (Wratten 1990:107-108, 113-114). There, it was Wratten who "divided them into groups and assigned them to small villages scattered over the reservation" and supervised them in agricultural pursuits. Wratten tried to supplement his salary of \$100 per month by operating the trading post at the fort, which served a dual purpose as a schoolhouse since Wratten employed some of the Apache children and used the labels on packages to help teach them to read (Wratten 1990:114-116).

In 1896, Wratten returned to Mount Vernon, Alabama, to ask the father of Julia Elizabeth (Bessie) Cannon for permission to marry his daughter. Mr. Cannon objected because of the difference in the lifestyles and ages of the two (Bessie was then 18, George was in his early 30s), but consented to the union if his daughter still wished to marry Wratten in three years when she turned 21 (Wratten 1990:116-117). This impending marriage appears to have been the impetus for the construction of the Wratten house at Fort Sill. For much of the time prior to this, Wratten lived with the Apaches in their villages (Wratten 1990:106, 118), but during the three years George and Bessie awaited their marriage, Wratten "built a house for her at Fort Sill near the old quarry and she told him by letter what colors to paint the rooms" (Wratten 1990:118). According to a 1911 letter listing improvements erected by the Apache prisoners of war, it was the Apache who constructed the house, therein described as one of three "cottage[s]" built by the prisoners of war (Superintendent 1911:n.p.).

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George and Bessie were married in 1899 (Wratten 1990:118). They moved to the house at Fort Sill, but Bessie was lonely and wanted to return to Alabama; they moved back to the Mount Vernon area in 1908. After two years of difficulties there, the Wrattens decided to return to Fort Sill, but by then George Wratten was suffering from tuberculosis. He died on 23 June 1912 (Wratten 1990:120-121).

The current archival research revealed nothing new about the George Wratten house at Fort Sill. Since two sites in the area were occupied by Wratten, the research effort concentrated on locating maps or narratives that would reveal the locations of the buildings and clarify the relationship between these two sites. The location of photographs or drawings of the house and outbuildings was also considered a high priority. Unfortunately, the only available photograph of the site at the Fort Sill Museum Archives (the facility most likely to possess photographs of the site) shows only a porch and is out of focus (Spivey, informal interview 1996a). Although all buildings within the boundaries of Fort Sill were assigned building numbers circa 1905 (Spivey, informal interview 1996a), no building number for the site could be determined; thus, extant building files for the site were not identified. If a number for the building can be determined, building files for that number should be researched. Additionally, George Wratten's son Albert has written a biography of his father that has never been published. Excerpts from the document (Wratten 1990) mention the house but do not give details. The manuscript is not located at the Arizona Historical Society, where C. L. Sonnichsen, editor of the excerpt, reported it to have been on file. Efforts to locate this document should continue during any future research on this site and on associated site 34Cm-402.

Summary

Site 34Cm-401 may well represent the remains of George Wratten's house or one or more of its outbuildings; old maps indicate this as the location, and several of the artifacts, such as the window glass and wire nail, suggest that a structure once stood here. However, it seems just as possible that nearby historic site 34Cm-402, an artifact scatter which lies approximately 150 m to the north at the top of a low rise, represents part or all of Wratten's homestead. Site 34Cm-401 appears to have been heavily impacted by military and construction activity since 1990, which has destroyed the remaining cultural materials. These impacts, in conjunction with the scarcity of materials here, limit the site's research potential. Site 34Cm-401 is recommended as ineligible for inclusion in the NRHP.

Site 34Cm-405 (Werye Homestead Site)

This historic site is located on both the east and west sides of a north-south section road 700 m south of McKenzie Hill Road and about 900 m north of South Boundary Road. It lies at an elevation of 395 m (1,295 ft) amsl within soils mapped as Foard-Slickspots complex, 1-3 percent slopes (USDA, SCS 1970). A dirt track cuts east-west through the western side of the site and a large pile of gravel obscures the northwestern edge. A windbreak composed of bois d'arc trees lines the east side of the road, shielding that half of the site from the western wind. Most of the site is covered with a dense mat of mixed grasses; within those areas, surface visibility is minimal. However, much of the site has been disturbed by heavy machinery. In those areas, as well as in the road, surface visibility approaches 100 percent.

This site is recorded as the location of an original Comanche allotment belonging to a Comanche woman named Werye; she and her heirs owned the site until government acquisition in 1957. GMI originally recorded the site in 1990 (Peter and Weston 1993). At that time, a diffuse but extensive scatter of historic glass, ceramics, metal, and other historic cultural material was noted in association with three features: a small E-shaped foundation, a capped well, and an intact storm shelter. The site was revisited by GMI

personnel in mid-October 1995. At that time, it was found that the storm shelter had been completely collapsed (possibly by a tank or bulldozer), that the three "prongs" of the foundation had been almost completely destroyed and dispersed by tracked vehicles, and that the well cover had been run over and cracked by a tracked vehicle. The artifact scatter remained much as previously described.

In late November 1995, a GMI crew returned to the site and conducted Phase II test excavations. In addition to the previous disturbances noted, it was found during testing that the E-shaped foundation had been even more disturbed since the previous site visit in October; a tracked vehicle has crumbled the south end of the foundation. Ten test units, including two 1-x-1-m squares and eight 50-x-50-cm units, were excavated to depths of 25-50 cm; an estimated 1.1 m³ was excavated. The soils were primarily a brown loam. The excavations yielded 163 historic artifacts and seven pieces of coal. The testing also resulted in the discovery of two additional features: the remains of a stone foundation and a small, partially buried, crumbling concrete foundation were also observed and recorded. Based on the testing and observation of surface materials, site 34Cm-405 is estimated to measure 87 m NS by 180 m EW, covering some 15,660 m² (Figure 25).

Features

Five features were observed during the Phase II testing at 34Cm-405. Feature 1, on the northern edge of the site, is the aforementioned water well. This concrete feature is 120 cm square and is marred by two diagonal cracks that meet near the center; in addition, the northeast and northwest corners of the feature have been broken off. A crushed galvanized metal pipe protrudes from the approximate center of the feature. The nature of the feature suggests that it might have served as a well pad for a windmill, a common feature in the region.

Feature 2, the remnants of the previously mentioned foundation, lies on the east-central side of the site. This feature, which is made of good-quality poured concrete, is shaped like an elongated letter E, with the three legs of the E extending toward the west. The major portion of the feature, which connects the three legs, measures approximately 6.7 m NS by 6 m EW; the southwest corner has been extensively damaged by heavy vehicular traffic. When intact, the three extensions measured approximately 20 cm wide by 30-40 cm high by some 11 m long; however, they are not currently intact. The eastern half of the northernmost extension has been completely obliterated and the western half is fragmentary. The middle extension is almost completely gone. The southernmost leg of the E is also mostly gone, though perhaps a third of it remains intact. This feature probably represents the remains of the historic house foundation.

When GMI visited this site in 1990 and 1991, Feature 3, an intact storm shelter, was still standing and was in good condition. Now, however, it has been destroyed: it is believed that a tank or bulldozer ran over it. The concrete and wood superstructure has collapsed into the subterranean portion of the shelter and is not visible from a distance, as it was in the early part of the decade. This feature, which lies on the west side of the site, measures 3.2 m NS by 6.8 m EW.

Feature 4 was observed for the first time during the current investigations. It lies northwest of Feature 3, just south of a massive pile of gravel, and consists of the remains of a partially buried concrete foundation. The material is poor-quality and is crumbling. The exposed portion of this feature consists of broken chunks of the material which appear to have been run over and dispersed; its shape suggests that the complete feature was square or rectangular in shape. Although the entire feature was not uncovered, the exposed portion measured about 4 m wide, east to west.

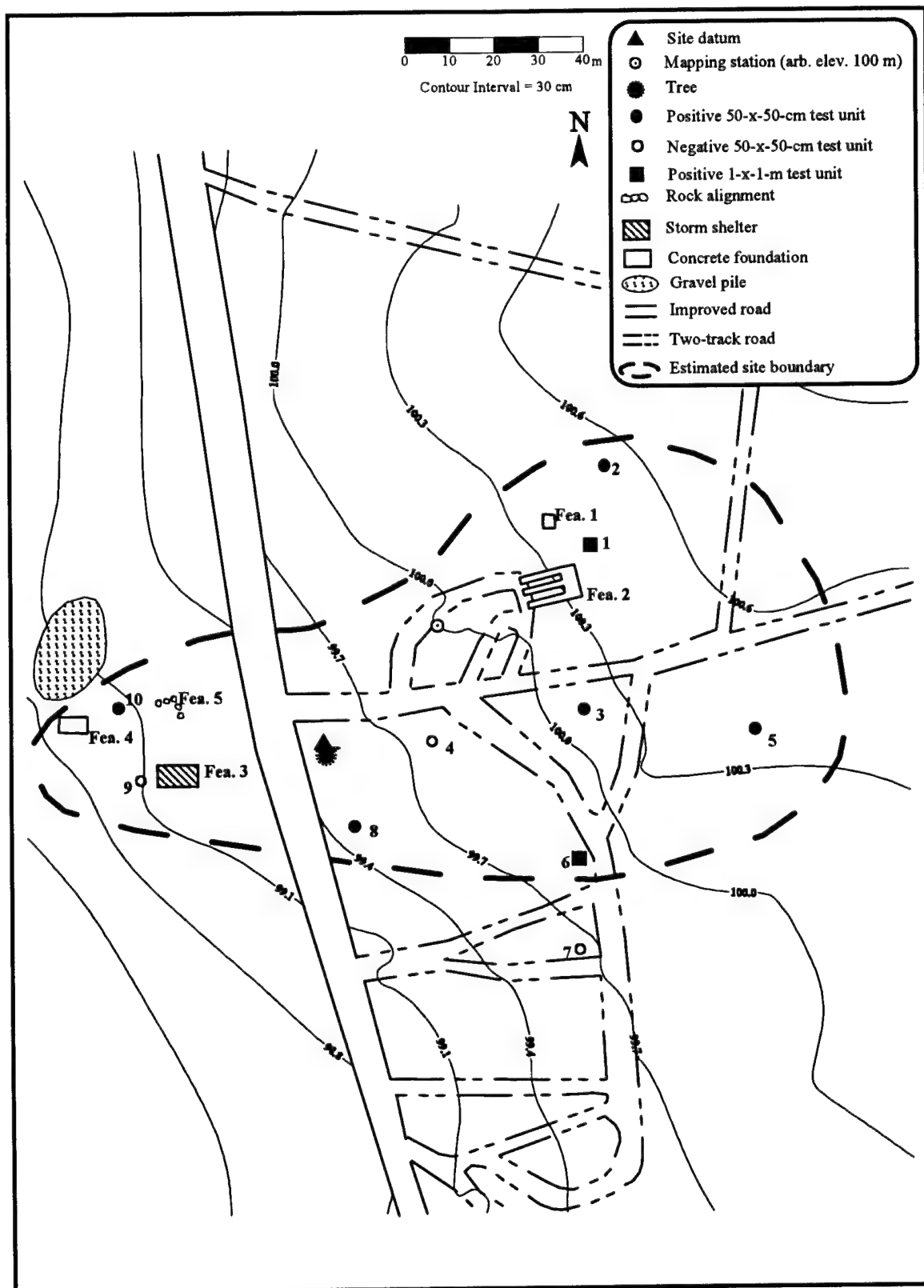


Figure 25. Plan map of the Werye Homestead site (34Cm-405).

The final feature is a minimal one. It lies immediately north of Feature 3, east of Feature 4, and consists of several dressed limestone foundation stones set flush to the ground. The stones are arranged in two linear sequences which come together to form the northeast corner of a foundation; no other possible foundation stones or footings were observed. The feature measures perhaps 2 m NS by 2 m EW.

Historic Artifacts Collected

A total of 163 artifacts, including 127 glass fragments, one gemstone (apparently from a ring setting), three ceramic fragments, 29 metal artifacts, two rubber fragments, and one modern plastic fragment, was recovered from subsurface contexts 0-20 cm bs at this site. Eight of the 10 units proved to be positive. The artifacts collected are discussed according to unit of origin in the following section.

Test Unit 1 (1-x-1 m)

Level 1, 0-10 cm bs

This excavation unit was the most productive at 34Cm-405, indeed the most productive in the entire 15-site excavation project. It yielded 116 artifacts. Eleven were metal: among these were two post-1880 wire nails made of iron (one eightpenny, the other tenpenny), one broken iron spike, one iron nail-head (post-1880), one fragment of iron wire, two flat iron fragments (possibly from a tin can), a post-1905 iron crown cap for a beverage bottle, one iron washer, a small fragment of copper tubing, and a decorative copper button (Figure 26a). Two ceramic fragments were collected: one is a Bristol slipped interior/exterior stoneware fragment (post-1900), while the other is an ivory-tinted whiteware sherd with relief-molded "flutes" (post-1920). Also collected was a fragment of unidentifiable hard, brittle rubber and a piece of modern plastic dating to after 1942 (probably military). Perhaps the most interesting artifact collected from this site was a small, well-worn amber-colored gemstone. This piece, which measures less than .5 cm across its upper face, is faceted and jewel cut, and is apparently meant for a ring setting. Although the material from which it is made is uncertain, it could be colored glass, topaz, amber, or a similar gem-quality stone.

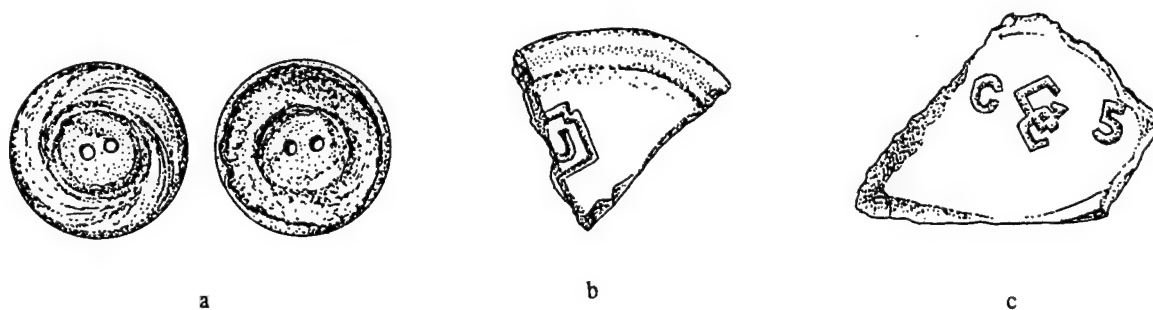


Figure 26. Historic artifacts from Test Unit 1, Level 1, of site 34Cm-405: (a) decorative copper button; (b) clear glass bottle base bearing part of a Keystone Bottle Company maker's mark (ca. 1929-1953); and (c) clear glass bottle base with Glass Containers Corporation maker's mark (post-1945). (Scale 1:1)

By far the most common type of artifact collected from this excavation level consisted of glass fragments: there were 100 of these. Eighty are transparent. Three clear fragments—which are nondiagnostic as to vessel of origin or age—are smooth and polished and appear to have served as a domestic fowl's gizzard stones. Of the 71 pieces which are diagnostic only as having been manufactured after 1910, five are from jars (one of these is also a gizzard stone), while the others are bottle fragments. One is slightly melted, 64 are not otherwise diagnostic, and one bears the maker's mark of the Owens Glass Company. Three clear glass fragments are soda bottle fragments exhibiting blue and white enamel labeling; these postdate 1930. One bottle base bears a maker's mark indicating that it was manufactured by the Keystone Bottle Company of Sheffield, Pennsylvania, sometime between 1929 and 1953 (see Figure 26b). One clear piece bears the interlocking "G" and "C" maker's mark of the Glass Containers Corporation of Fullerton, California; it was made after 1945 (see Figure 26c). The final clear glass fragment derived from a drinking glass rim and was manufactured after 1900.

The remaining 20 glass fragments from this excavation level include a fragment of red table glass (1900-1940); three fragments of Depression-era table glass, one blue-green and two pink (1920-1950); a manganese solarized bottle glass fragment (1880-1920s); a light green fragment of a Coca-Cola bottle (post-1920); a fragment of emerald bottle glass (post-1930); and 13 amber/brown bottle glass fragments. Nine of the latter were made after 1910; seven are not diagnostic further, but one has a crown lip and the other has an embossed "9" on the base. Three of the amber/brown fragments are corrugated bottle bases postdating 1940. The remaining piece, which was made between 1929 and 1954 by the Illinois Glass Company, has a corrugated base complete with an embossed "I" in a circle and diamond and the number "2158," probably a lot number.

Level 2, 10-20 cm bs

The second level of this excavation unit yielded only four artifacts. These included two clear bottle glass fragments made after 1910; a clear, table glass fragment manufactured after 1900; and an amber/brown bottle glass fragment (post-1910).

Test Unit 2 (50-x-50 cm)

Level 1, 0-10 cm bs

One artifact, a clear bottle glass fragment made after 1910, was collected from this excavation level.

Test Unit 3 (50-x-50 cm)

Level 1, 0-10 cm bs

Six coal fragments and five artifacts were recovered from this excavation unit. Among the artifacts was an eightpenny wire nail postdating 1880; two aqua fruit jar fragments (1870-1940); and a Bristol slipped interior/exterior stoneware fragment made after 1900.

Test Unit 5 (50-x-50 cm)

Level 1, 0-10 cm bs

The only artifact recovered from this excavation unit was a wire spike, which is made of iron.

Test Unit 6 (1-x-1 m)

Level 1, 0-10 cm bs

One piece of coal and 26 artifacts were collected from this excavation level. Included among these were 11 fragments of iron from a food can; one piece of grooved rubber of indeterminate age; a slightly melted aqua glass fruit jar lip dating from between 1910 and 1940; three clear bottle glass fragments postdating 1910; nine heat-fractured clear bottle glass fragments; and a piece of light green window glass.

Level 2, 10-20 cm bs

This excavation level yielded an additional four artifacts: two thin, flat, iron fragments, probably from a can; a clear, post-1910 bottle glass fragment; and a burned and melted clear glass fragment of indeterminate origin.

Test Unit 8 (50-x-50 cm)

Level 1, 0-10 cm bs

A tapered, T-shaped fragment of cast iron was the only artifact recovered from this excavation unit.

Test Unit 9 (50-x-50 cm)

Level 1, 0-10 cm bs

Four artifacts were collected from Test Unit 9, all from the upper 10 cm. One is an eightpenny wire nail, made after 1880. The remaining three are light green window glass fragments.

Test Unit 10 (50-x-50 cm)

Level 1, 0-10 cm bs

This excavation level yielded only one artifact, a sixteenpenny wire nail made after 1880.

Archival Research

The site is located in the northwest quarter of Section 17, Township 2 North, Range 13 West. This quarter-section was originally allotted to a Comanche woman called Wer-ye⁵ (allottee number 2276) in government records (Anonymous n.d.:20), on 5 June 1901 (Oklahoma Tract Books [OTB] 1901:51/59). Werye, a full-blooded Comanche, was born about 1876. She was first listed in Comanche census records in 1885, when she was a member of the Kawertzene band; in 1888 and 1892 she was a member of the Saupitty band (Kavanagh n.d.:n.p.). Her first husband, Mah-cho, died before the 1900 and 1901 land allocations. Werye's second husband was known as Nah-da-ya-ka (allottee number 2274). Werye and Nahdayaka were probably living in a house on Nahdayaka's allotment until his death in 1931.⁶ Werye inherited Nahdayaka's allotment after his death and retained ownership until her own death in 1944 (Anadarko Area Office of Indian Affairs [AAO] 1901:123; United States Department of the Interior, Bureau of Indian Affairs [USBIA], Allotment File [AF] 2276 1946a:1-3). Sometime after the death of Nahdayaka, Werye moved onto her own allotment, where she lived with her sister Ho-ne-nan-a-ker until that sister's death circa 1942. It is not known if Honenanaker had previously lived there or whether they lived in a house or a tepee. After Honenanaker's death Werye lived with various relatives, spending most of her time with a niece named To-or-chi (USBIA, AF 2276 1946b:2). Werye died in January 1944, still owning all of her own allotment, the northwest quarter of Section 17. She had survived all of the children she had had with both husbands, so there were no direct heirs (USBIA, AF 2276 n.d.:n.p.; USBIA, AF 2276 1946c:1).

Several relatives claimed portions of Werye's property: one claimant was Otis Chappabitty, the son of Werye's other sister, Che-weck-e-ah, who had apparently died before Honenanaker. Otis had been allotted land southwest of present-day Fort Sill (near Indianahoma), near or on which he was living in the early 1940s (Anonymous n.d.:8; USBIA, AF 2276 1946c:2). Other prospective heirs included Tah-quint-ter-up, also known as William Saupitty; Leon Saupitty; the children of Werye's deceased brother, Sau-pitty; and the niece named Toorchchi (USBIA, AF 2276 1946c:1). In her will (USBIA, AF 2276 1943:n.p.), Werye left all the northwest quarter of Section 17 to Otis Chappabitty; although the will was contested (this will replaced one written earlier), it must have been upheld since Otis and his wife Lucy are the only grantees given on subsequent documents concerning the tract. Thus, Werye's original allotment was conveyed to Chappabitty in 1946.

Otis Chappabitty, still living at Indianahoma, leased 95 acres (38.4 ha) out of this quarter section to Alex K. Neugebauer in March 1955 for farming, in exchange for one-third of the grain and one-fourth of the cotton produced thereon (Comanche County Clerk [CCC] 1955 *Deed Record* 416:249). There may have been other lease agreements during the years previous, but none were located. Chappabitty rescinded the agreement the following year because he "wishes to farm the land himself" (CCC 1956 *Deed Record* 440:663). A short time later the government began actions to acquire the property. Records of an appraisal conducted in 1956 show there were several standing structures on the property at that time, including a dwelling, 36 by 22 ft (10.9 by 6.7 m); a chicken house and coop, 10 by 7 ft (3 by 2.1 m) and 3 by 3 by 12 ft (.9 by .9 by 3.7 m), respectively; a granary, 10 by 14 ft (3 by 4.3 m); an outhouse, 4 by 4 ft (1.2 by 1.2 m); a pump and an

⁵ Names are spelled both with and without hyphens in the archival records. In this report, names are spelled with a hyphen in the first occurrence, without a hyphen thereafter.

⁶ In 1915, Nahdayaka (also spelled Nahdahyakah) had five horses, six milk cows, 16 beef cattle, two hogs, three pigs, 20 chickens, a garden in which he grew vegetables and melons, one wagon, one buggy, one corn planter, one lister, one harrow, and two sets of harness. He also owned a three-room box house, although the source of this information did not say in which section or township the structure was located (Kiowa Agency 1915a:n.p.).

unspecified amount of pipe; a 360-gallon (1,363-l) butane tank; and 10,560 ft (3,219 m) of fencing. These structures were reserved by Chappabitty for removal prior to the government's acquisition of the property (USBIA, AF 2276 1956a:2). Other structures may also have been located there but not listed because they were not reserved for removal.

The appraisal record also noted that at that time 82 acres (33 ha) were under cultivation, 74 acres (30 ha) were being used for pasture, the land was valued at \$12,590, and the improvements were valued at \$2,290 (USBIA, AF 2276 1957a:n.p.). Neugebauer claimed he had farmed the property for four years and was due compensation for the improvements he made to the property (USBIA, AF 2276 1957b:n.p.). However, Neugebauer was found to have been an "unauthorized occupant" of the property and not due compensation (USBIA, AF 2276 1956b:n.p.). No record was located showing whether Chappabitty removed any of the structures prior to the transfer of the property to the government. The northwest quarter of Section 17—Tract Number C-302, to be used for an Artillery and Guided Missile Center—was sold to the federal government on 28 December 1956 for \$14,050 (CCC 1956 *Deed Record* 445:299).

Summary

Site 34Cm-405 represents the remains of an original Comanche homestead, occupied from 1901 until government acquisition in 1957. It is unknown whether the structures known to exist there at the time of acquisition were removed or destroyed, although the records indicate that most of the structures were at least reserved for removal by the Comanche owner. Whatever the case, what remained was apparently bulldozed and burned; evidence of this is found in the many burned and melted glass fragments collected from the test units. The site is currently in poor condition. Indeed, the condition has worsened significantly since its original discovery in 1990, despite recommendations for its preservation at that time until Phase II testing could be conducted. Several new features were discovered, but they too were in poor shape. Although this site does represent one of the few Comanche allotments apparently occupied from allotment until government acquisition (in this case 56 years), it is felt that the extensive impacts and resulting poor contextual integrity significantly limit the site's research potential. Therefore, the Werye Homestead site is considered to be ineligible for inclusion in the NRHP, and no further work is recommended at 34Cm-405.

Site 34Cm-407 (Rabbit Hill II Site)

This prehistoric site lies at the southern base of prominent Rabbit Hill, less than 100 m east of another tested site, 34Cm-425 (Rabbit Hill III). Site 34Cm-136, the Kiowa-Apache burial that was labeled the Rabbit Hill site by Pearson (1978), lies in a canyon about 800 m to the northeast. At Rabbit Hill II, the ground surface slopes very slightly to the south and east. Soils are mapped as Granite Cobbly land (USDA, SCS 1970); the elevation is approximately 384 m (1,260 ft) amsl. Vegetation in this area is dominated by an open scrub-oak forest. Understory and ground cover are almost nonexistent, although there are occasional patches of mixed grasses, and erosion has severely damaged the entire site area. Surface visibility approaches 100 percent in some areas.

The Rabbit Hill II site was first identified by GMI in 1990 as two contiguous sites (Field Numbers 91-9 and 91-13), which were later combined into one during postsurvey analysis (Peter and Weston 1993). Upon its original discovery, it was recorded as a light artifact scatter of fine-quality chert debitage and tools, including several biface fragments, a Scallorn/Edwards arrowpoint, two Fresno arrowpoints, one Talco arrowpoint, an unidentified triangular point, and a fragment of a Plains Woodland dart point. When it was subjected to Phase II test excavations in November 1995, the site proved very difficult to locate, as continued erosion and

military usage of the site (in conjunction with previous surface collections) have removed most of the cultural material. However, discovery of the original datum tags allowed relocation of the site. The GMI crew located and piece-plotted only 10 surface artifacts (six of which were found in a cluster at the bottom of a gully), mostly low-quality quartzite and chert, as well as two small bone fragments. During the course of the testing, five 1-x-1-m units and four 50-x-50-cm units were excavated to an average depth of 20 cm. The soils consisted of a deflated, yellow-brown clayey silt; a volume of approximately 1.075 m³ was excavated during the testing. Seven of the nine units proved sterile, but Test Unit 1 (a 1-x-1-m unit) yielded one artifact from the upper 10 cm and five artifacts from 10-20 cm bs, and Test Unit 9 (a 50-x-50-cm unit) produced seven small bone fragments. A chalcedony shatter fragment and an Alibates dolomite shatter fragment with a utilized edge were collected from the surface. Current estimates place the site size at 137 m NW-SE by 63 m NE-SW, or 8,631 m² (Figure 27).

Prehistoric Artifacts Collected

Eight artifacts were collected from site 34Cm-407. Two were collected from the surface, while six came from a test unit.

Surface Collection

Both of the pieces collected from the surface came from small erosional gullies cutting across the site, so neither was in a primary context when found. One piece is of chalcedony; this artifact is an unaltered shatter fragment which fits into Size Grade 3. The other artifact is an end scraper. It was made on a large Alibates dolomite shatter fragment, and measures 35-x-18-x-8 mm (length-x-width-x-thickness) with a weight of 5.8 g.

Test Unit 1 (1-x-1 m)

Level 1, 0-10 cm bs

One artifact was collected from this excavation level. This tertiary Potter chert flake fits into Size Grade 5 and may have been thermally altered.

Level 2, 10-20 cm bs

Five Size Grade 5, tertiary debitage fragments—three flakes and two shatter—were recovered from this excavation level. Two of the flakes are bifacial thinning flakes: one is of chert, the other of chalcedony. The remaining flake is of Potter chert. One piece of shatter is of Potter chert; the other is of a conglomerate material. None of these pieces bears evidence of thermal alteration.

Prehistoric Surface Finds

Four artifacts or artifact clusters were detected on the surface and piece-plotted (see Figure 27). Surface Find 1 was the distal fragment of a small secondary chert flake. Surface Find 2 was the chalcedony shatter

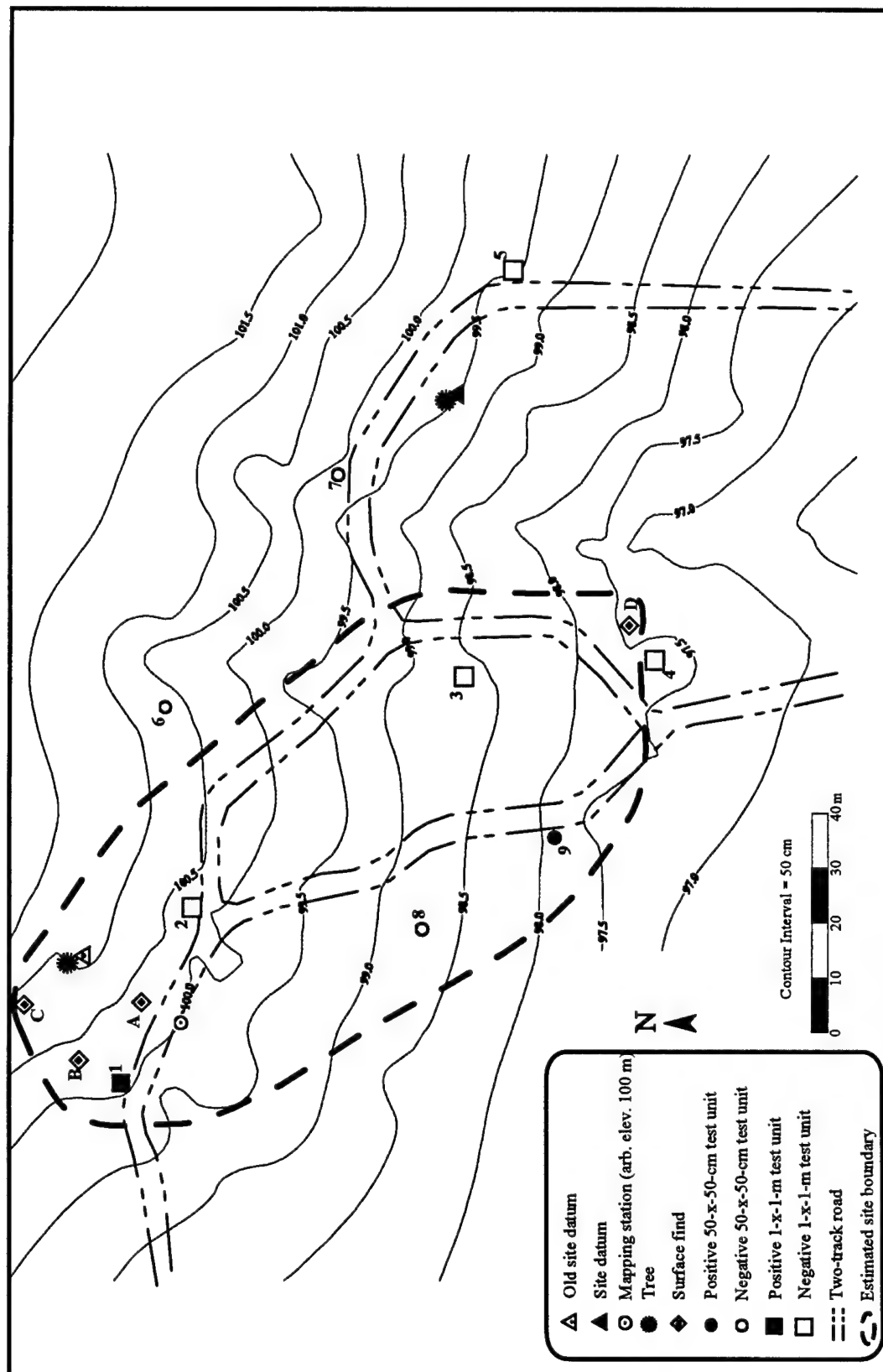


Figure 27. Plan map of the Rabbit Hill II site (34Cm-407).

fragment previously discussed. Surface Find 3 was a small scatter of six crude Potter chert secondary and tertiary fragments found in the bottom of a small wash; differences in color suggest that these pieces did not derive from the same core. The fourth and final surface find was the Alibates end scraper previously discussed.

Faunal Material Collected

Seven indeterminate medium/large mammal bone fragments were collected from the third level of Test Unit 9, a 50-x-50-cm unit. These pieces, which exhibit light weathering and angular breakage, may or may not represent food refuse.

Summary

The Rabbit Hill II site probably represents the remains of a prehistoric upland hunting station or base camp. Previous finds suggest an occupation during the Plains Village and Plains Woodland periods. While the site has in the past produced a moderate assemblage of artifacts, including diagnostic tools, the site now unfortunately almost completely lacks contextual integrity, and the assemblage is minimal. Given the poor condition of the site and the limited assemblage, this site is not considered eligible for inclusion in the NRHP.

Site 34Cm-414 (Nahwauconic Homestead Site)

The Nahwauconic Homestead site is located on the northern edge of the Fort Sill Military Reservation, sandwiched between a dirt perimeter road and the north boundary fence. An unnamed drainage marks the eastern boundary of the site and Oklahoma State Highway 49 lies immediately north of the fence. A military landing strip is plotted on old maps as no more than 250 m to the west. The site lies within an open forested area, which includes large, stately oaks and several pear trees, probably remnants of the historic occupation. Undergrowth takes the form of small sumac bushes, small oaks, and briars; ground cover is otherwise provided by mixed grasses, forbs, and poison ivy. The site is perched on the northern end of a small ridge, at an elevation of about 395 m (1,295 ft) amsl. Soils are mapped as Foard-Slickspots, 1-3 percent slopes (USDA, SCS 1970).

Site 34Cm-414 is notable for two primary reasons: it contains several interesting (though damaged) features, and (like 34Cm-405) is one of the few original Comanche allotments to be retained by Comanche owners until government acquisition of the property, in this case in 1942. It was originally relocated by GMI in 1990; at that time, seven features were noted, including several concrete foundations, a large storm shelter, a septic tank, a well, and a stone ring. A large scatter of historic glass and metal was identified on the southeastern margin of the site (Peter and Weston 1993). In October 1995, an architect under contract to GMI, Joe C. Freeman, AIA, visited the site to sketch the storm shelter, which (though collapsed) was then considered to be one of the best-preserved on the installation. In November 1995, a crew from GMI returned to the site to conduct Phase II test excavations. At that time, eight features were identified, including all those previously mentioned, as well as a small half-ring of stones around a pear tree. All the features were sketched except for Feature 1 (the storm shelter previously documented) and Feature 6, a large, overgrown, poorly preserved concrete slab which might have once served as a floor for an outbuilding or garage.

The soil at this site consists of a brown to dark brown clay loam, giving way to a dense clay. Ten units (two 1-x-1 m, and eight 50-x-50-cm units) were excavated here, to a maximum depth of 40 cm; an estimated

1.425 m³ of sediment was removed and screened for cultural materials. In most cases the findings were minimal, although the unit closest to the house foundation produced a wealth of nails and asphalt shingle fragments. The testing resulted in the collection of 163 historic artifacts, which seem to indicate a late nineteenth/early twentieth-century presence, as stated in the existing records. Total area of the site is estimated at 4,250 m² (50 m NS by 85 m EW; Figure 28).

Features

Eight surface features were identified at site 34Cm-414. Feature 1 is the aforementioned storm shelter, which is a stone, concrete, and wood structure typical of those built between 1900 and 1940 (Figures 29 and 30). This feature measures approximately 3 m NS by 4 m EW; the walls are constructed of large, flat, stone slabs laid up vertically, set in mortar, and covered with a cement wash. The vaulted roof is made of concrete, with wooden supports. Woven steel cable was observed to be the reinforcing for the concrete vault and a 10-cm (4-in) diameter vent is centered in the roof. The remains of a window were observed on the east end of the structure; a door is located on the west end. Leading down to the door are the remains of cast-in-place concrete steps. Window and door openings are framed in common 5-cm (2-in) lumber and fastened with wire nails. Large wire nails were observed in the top of the vault on the east and west ends, and a 1.3-cm (.5-in) diameter anchor bolt projects from the concrete skirt at the top of the steps. Currently, the structure is partially collapsed, with walls fallen in on both ends. The side walls are bulging toward the interior. A large amount of dirt has washed into the interior, though a hard-packed earth portion of the floor was observed during the examination of the feature.

Feature 2 is apparently the remains of a house foundation. It measures approximately 7.3 m NS by 10.25 m EW and consists of a series of concrete and cobble walls dividing off an interior space with a dirt floor; the walls, which consist of concrete formed over a single course of native stone cobbles, are perhaps 20 cm thick. An interior wall separates the eastern half of the foundation from the rest of it, forming two "rooms." The foundation probably acted as support for a wooden superstructure.

Feature 3 is the remains of a concrete-and-stone-cobble-lined well. Much of the well curbing has collapsed into the interior of the well; it was apparently bulldozed when the property was acquired by the federal government in 1942. Currently, the well is full of stone rubble, water, tree roots, and leaves. A water pipe extends from the western lip of the feature, which measures about 2 m NS by 1.9 m EW. Before it was bulldozed, the well was probably more perfectly round.

Features 4 and 5 are decorative stone rings that were placed around ornamental trees. Feature 4 is complete; it is oval in shape and measures approximately 6.5 m NS by 3.5 m EW. A large hardwood tree, possibly an oak, lies on the northwestern edge of the ring, which is made up of 28 individual stones. Feature 5 is actually a half-ring: only the eastern half of this ring has survived intact. It measures 2.8 m NS by 1.8 m EW, is made up of 18 stones, and flanks a pear tree (which was bearing at the time of the current fieldwork).

The sixth feature consists of a large, poured concrete slab foundation measuring approximately 12 m NS by 7 m EW. Much of the feature was covered with humus and a dense root mat, which had to be cleared away before the slab's true dimensions could be determined; some of the humus was so thick that small sumac trees were rooted in it and were growing over part of the feature. Some damage has occurred along the corners and edges, apparently due to vehicular traffic. This feature probably functioned as the floor of a barn, garage, or other outbuilding.

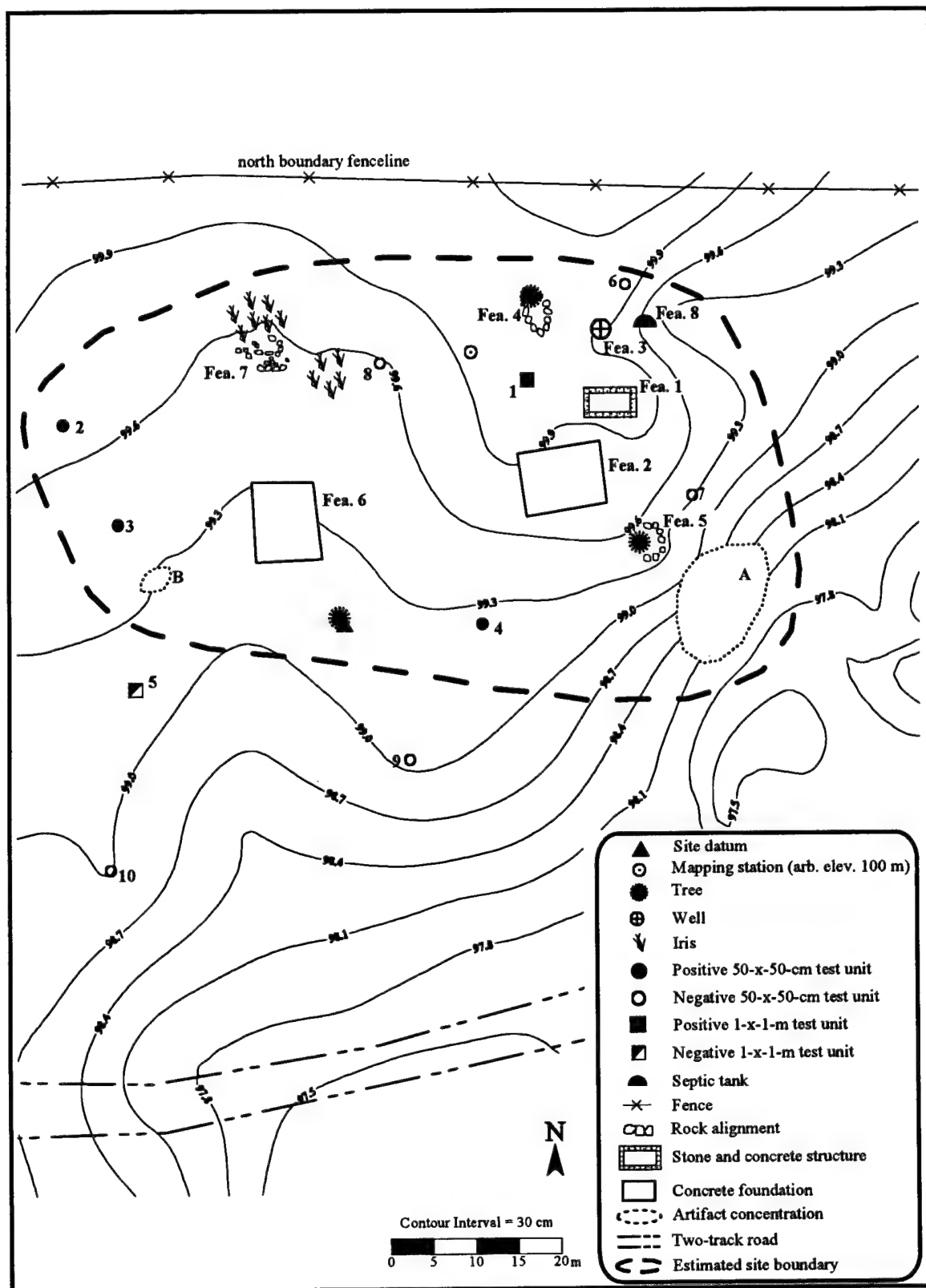


Figure 28. Plan map of the Nahwaconic Homestead site (34Cm-414).



Figure 29. Photograph of Feature 1 at site 34Cm-414.

Feature 7 is, like Features 4 and 5, a stone cobble feature; however, exactly what its purpose was could not be determined, despite a careful examination and mapping of the placement of its 47 constituent cobbles. They are scattered over an area approximating 4 m NS by 6 m EW. A rectangular area containing ornamental vegetation lies immediately to the north; these stones may represent the remains of a decorative stone wall lining a flower bed, or perhaps of a small walkway. No obvious pattern was observed.

The eighth and final feature observed at site 34Cm-414 was a small half-circle or D-shaped poured concrete slab set flush with the ground less than 15 m north of the well. It was necessary to unearth this feature; very little of it was exposed at the surface. It is made of high-quality concrete, has an iron handle or hook embedded in its west side, and was interpreted as a septic tank. A crack bisects the feature north-south, and the eastern corner of the feature has been broken off. A large piece of iron, possibly part of a plow, protrudes from beneath the broken lid.

Historic Artifacts Collected

This site produced a fairly large assemblage. A wide variety of artifacts (n=28) was collected from the surface; the remainder came from five of the 10 test units.

Surface Collection

Many of the 28 surface artifacts collected at the Nahwauconic Homestead site were glass and ceramic artifacts, although metal and plastic pieces were also collected. The metal artifact is a brass and iron clock

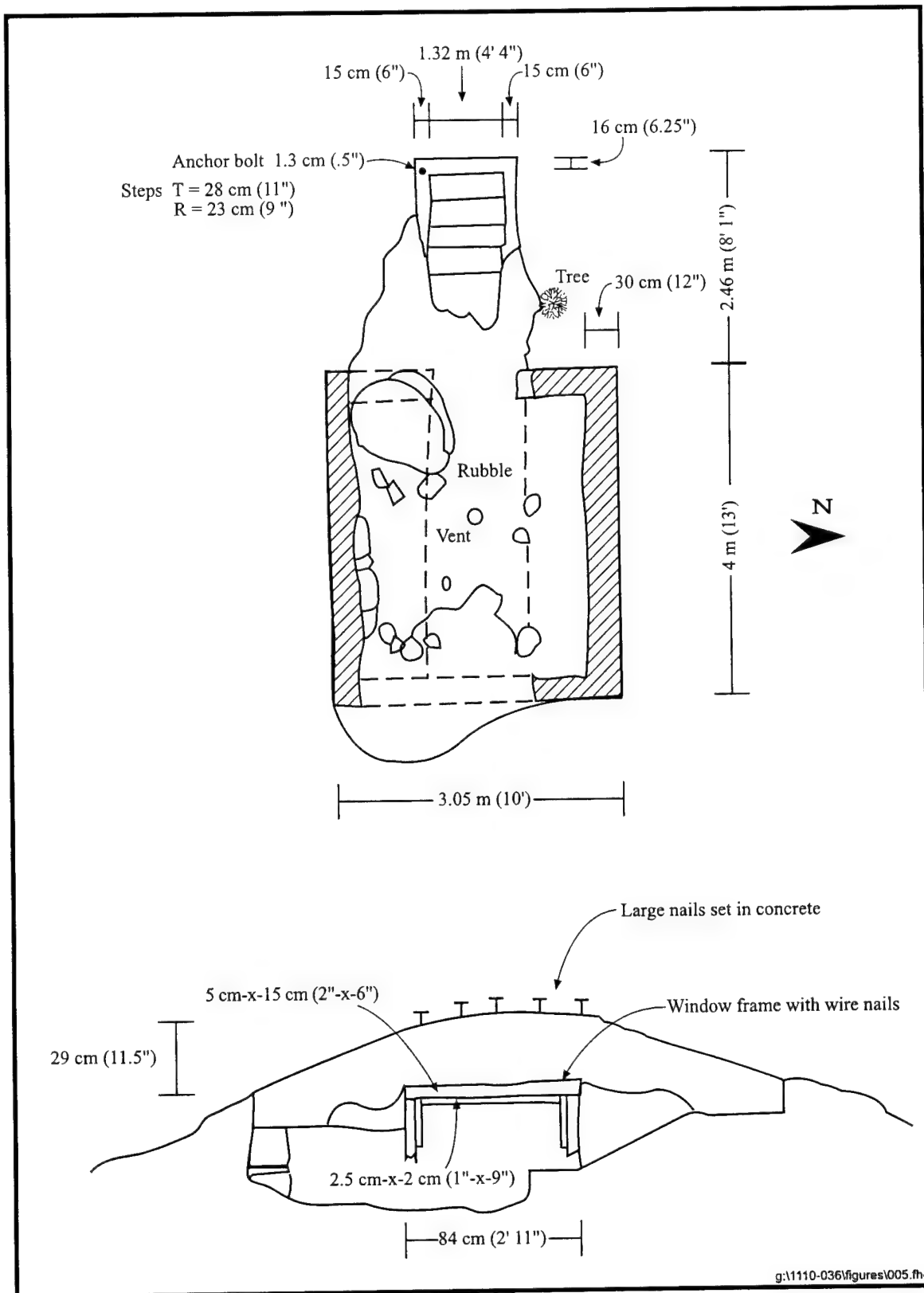


Figure 30. Plan view and east elevation of the storm shelter at site 34Cm-414.

gear of indeterminate age (Figure 31a); the plastic artifact is a four-holed half-button, made after 1942. Eleven ceramic artifacts were collected, including seven whiteware sherds, an ironstone sherd, a stoneware sherd, and two fragments of porcelain. Of the whiteware fragments, one is an undecorated, post-1890 rimsherd; one is a dark ivory-tinted molded bowl base fragment made after 1930; one is a light ivory-tinted molded rimsherd made after 1920; one is a decorated piece with a small floral molded royal rim (post-1890); one is decorated with a large floral, molded, plain rim (post-1890); one piece is decorated with pink and blue bands (1920-1950); and the last bears a polychrome floral over-the-glaze decalcomania molded marley pattern (1895-1950). The ironstone sherd is an undecorated rim fragment made between 1840 and 1910, and the stoneware sherd is a fragment of a Bristol slipped interior/exterior vessel made after 1900. The two porcelain fragments, which do not crossmend, are decorated with a polychrome floral over-the-glaze decalcomania pattern with gilded bands (see Figure 31b and 31c). These pieces were made between 1895 and 1950.

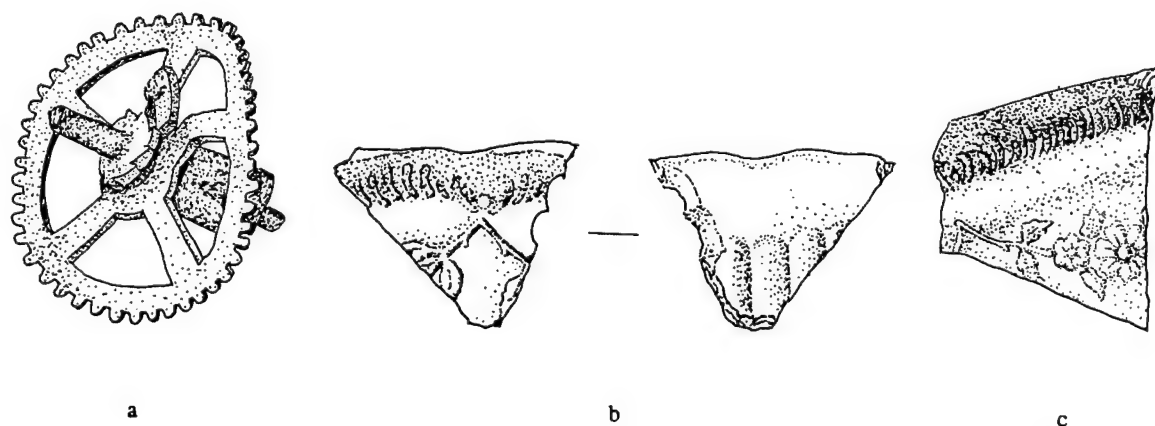


Figure 31. Historic artifacts collected from the surface at site 34Cm-414: (a) metal clock gear; (b and c) decorated porcelain fragments (ca. 1895-1950). (Scale 1:1)

There are also 15 glass artifacts in the surface collection. Seven of these are clear. One is a fruit jar fragment with a lightning bail lid made between 1900 and 1942; a second is a complete hair tonic bottle made between 1920 and 1964 by the Hazel-Atlas Glass Company of Wheeling, West Virginia (Figure 32). One complete clear glass condiment bottle (Figure 33), as well as a clear glass bottle base (Figure 34a), were made by the Owens Glass Company of Toledo, Ohio, between 1911 and 1929. Other clear glass artifacts included two base fragments from square, pressed drinking glasses (1920-1950; see Figure 34b) and a molded bowl rim (1920-1950). Also in the sample were an aqua fruit jar fragment (1905-1935), an aqua bottle glass base with an unidentified diamond maker's mark (1910-1940), three pieces of Depression glass (1920-1950)—one pink and one green—two milk glass fragments bearing a pressed floral design with a colored rim treatment (1890-1960), a corrugated amber/brown bottle base with a "Duraglas" maker's mark (post-1940), and a cobalt bottle glass fragment with a continuous thread lip (1890-1960).

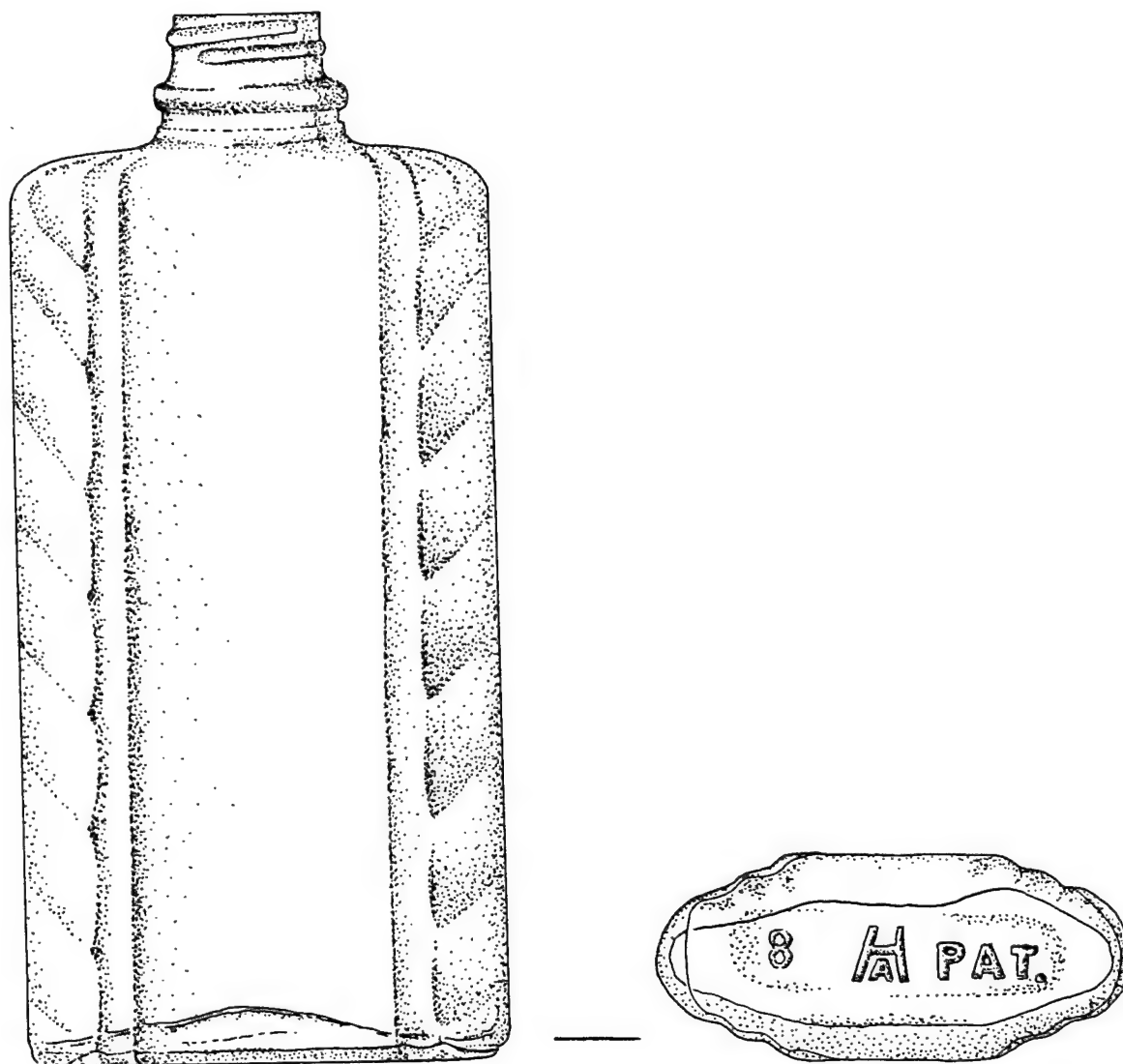


Figure 32. A clear glass hair tonic bottle collected from the surface at site 34Cm-414 (ca. 1920-1964). (Scale 1:1)

Test Unit 1 (1-x-1 m)

Level 1, 0-10 cm bs

This unit produced only four artifacts, all of which are clear bottle glass fragments made after 1910.

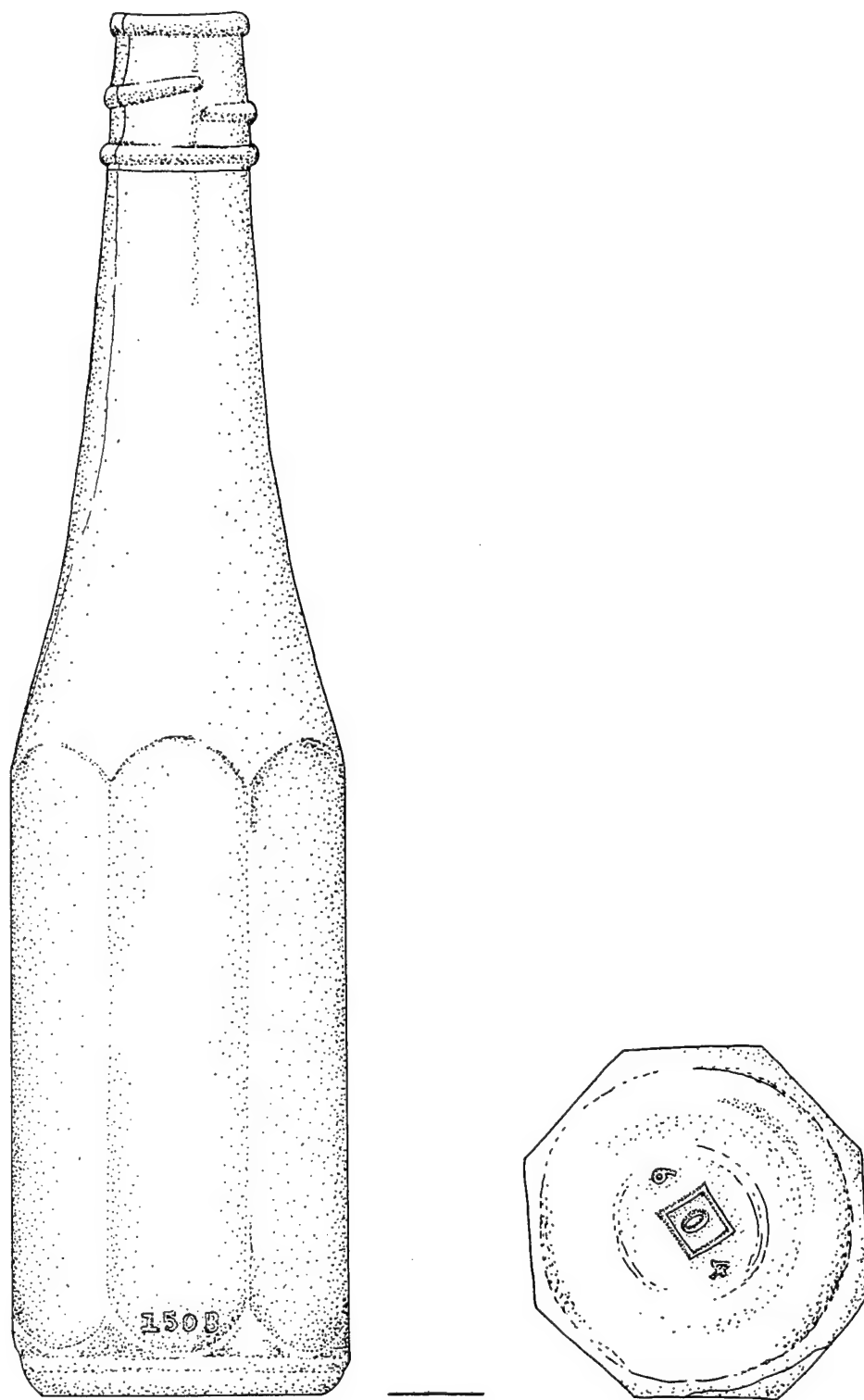


Figure 33. A clear glass condiment bottle (ca. 1911-1929) collected from the surface at site 34Cm-414. (Scale 80 percent of original)

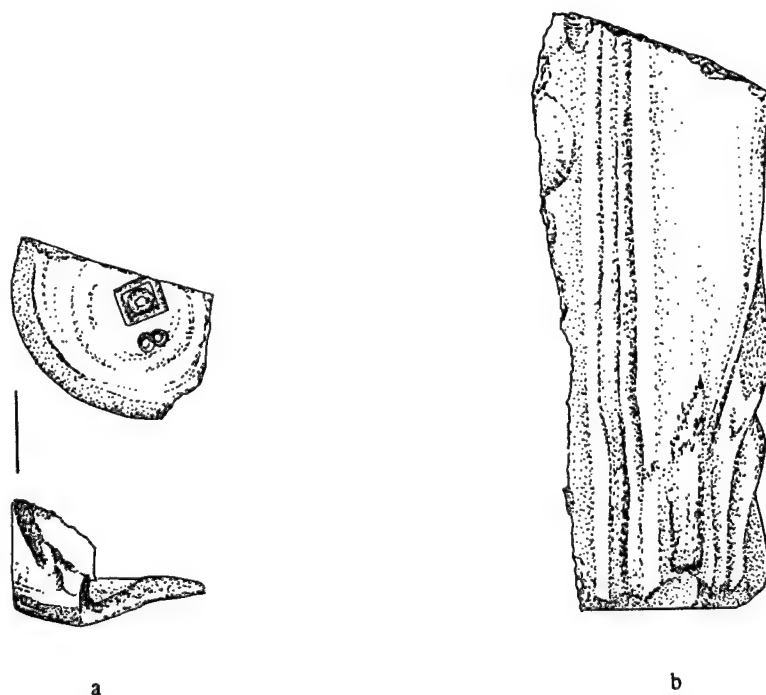


Figure 34. Glass artifacts collected from the surface at site 34Cm-414: (a) a base fragment from an Owens-Illinois clear glass bottle; (b) a fragment from a pressed square, clear drinking glass (1920-1950). (Scale 1:1)

Test Unit 2 (50-x-50 cm)

Level 1, 0-10 cm bs

Three artifacts were recovered from this excavation level. Two are sixpenny wire nails (post-1890); the third is a Bristol slipped interior/exterior stoneware fragment (post-1900).

Test Unit 3 (50-x-50 cm)

Level 1, 0-10 cm bs

This excavation level yielded a total of three artifacts: a post-1930 emerald bottle glass fragment, an iron crown cap for a beverage bottle (post-1905), and two crossmendable yellowware ceramic fragments decorated with pink and blue bands (1920-1950).

Level 2, 10-20 cm bs

This level also produced four artifacts, including an eightpenny wire nail (post-1880); a cylindrical graphite battery core (post-1910); an emerald bottle glass fragment (post-1930); and a clear bottle glass fragment (post-1910).

Test Unit 4 (50-x-50 cm)

Level 1, 0-10 cm bs

Ninety-seven artifacts were recovered from the upper 10 cm of this unit; most of these are nails (n=65) and asphalt shingle fragments (n=23). The shingle fragments were made after 1920, but are not otherwise diagnostic. All the nails are wire nails postdating 1880. Thirteen are roofing tacks; three are twopenny joining nails; one is a fivepenny nail; six nails are of the sixpenny denomination; 25 are eightpenny nails; five are sixteenpenny; eight are fivepenny flooring nails; one is an eightpenny flooring nail; and one nail is broken and nondiagnostic. Also included in this category are a fencing staple and a horseshoe nail.

Other artifacts collected from this unit include four plain iron wire fragments, a barbed wire fragment, a large cast-iron machine part, two aqua window glass fragments, and a clear bottle fragment (post-1910).

Test Unit 9 (50-x-50 cm)

Level 1, 0-10 cm bs

Six historic artifacts were collected from near-surface contexts in this unit. These include a large wire spike (post-1880); an eightpenny wire nail (post-1880); a fragment of aqua window glass; an amber/brown bottle glass fragment (post-1910); and two clear bottle glass fragments, one of which is relief-molded (post-1910).

Level 2, 10-20 cm bs

Four artifacts were recovered from this level. All four are clear table glass fragments deriving from a drinking glass base (post-1910).

Level 3, 20-30 cm bs

This excavation level yielded two crossmendable aqua bottle glass fragments made after 1910.

Archival Research

This site is located in the northeast quarter of Section 21, Township 3 North, Range 12 West. The entire quarter section was originally allotted to a Comanche woman listed in government records as Nah-wau-con-ic, allottee number 2561 (Anonymous n.d.:24). She was allotted the property 6 June 1900 (OTB

1900:50/214). Nahwauconic first appeared in Comanche census records in 1892, a member of the Big Kiowa band (Kavanagh n.d.:n.p.).

During her long life, Nahwauconic was married to four Comanche men. Her first husband was Pe-ter-kah, who died before 1901. She next married Pah-su-a-rah (allottee number 2560) in 1873; he died in 1904. She married Tah-bo-her (allottee number 1976), her third husband, in 1907; Tahboher died in 1915. And Nahwauconic married her last husband, Ker-chee (allottee number 2328), in 1917. Kerchee died one year later. She had no children from any of these marriages (USBIA, AF 2561 1930a:1-2, 5). After the death of Kerchee she moved onto land owned by To-wick-ah (allottee 2348), her cousin (USBIA, AF 2561 1930b:2).

Nahwauconic died in May 1929 at the age of about 75. Her estate at that time consisted of several hundred acres of allotments (both her own and inherited land), including the northeast quarter of Section 21; and \$91 earned from the "Lease of land Red River fund" (Kavanagh n.d.:n.p.; USBIA, AF 2561 1930a:1). At the time of her death all 160 acres (64.75 ha) of the northeast quarter of Section 21 were being used for grazing; the land was valued at \$2,400, and the improvements thereon at \$150 (USBIA, AF 2561 1930c:1). The improvements valued at \$150 could refer to a house, barn, fencing, or other such items. There were definitely houses on two other allotments owned by Nahwauconic at the time of her death—the southwest quarter of Section 1, Township 2 South, Range 13 West, originally allotted to Tahboher, contained a house, shed, and fence; and the northwest quarter of the same section, originally allotted to Toy-pay (allottee number 1977 and probably a deceased relative of Tahboher), also contained a house, shed, and fence (USBIA, AF 2561 1930d:1; USBIA, AF 2561 1930e:1). If either of these structures were occupied at the time of Nahwauconic's death, they were not occupied by her. As stated above, she had moved onto Towickah's allotment about 1918; she was still living there in 1929. O. P. Weddle, who lived in Faxon, Oklahoma, leased some of Nahwauconic's land (USBIA, AF 2561 1930a:2; USBIA, AF 2561 1930b:2-3), probably the property in Section 1 since it was closer to Faxon. When she died, all of Nahwauconic's property went to Towickah (USBIA, AF 2561 1930a:1).

Towickah⁷ was married to Wim-ner-chy (allottee number 2363), who survived him after his death in January 1934. Wimmerchy—half Comanche, half Hispanic, and about 72 years old in 1934 (AAO 1901:320)—inherited all Towickah's property except his interest in the southeast quarter of Section 13, Township 1 North, Range 13 West, which he left to his daughter. In 1935, the entire estate of Towickah, of unknown proportions, was valued at \$15,083.33 (CCC 1935 *Deed Record* 1370:85-86). The northeast quarter of Section 21, which contains site 34Cm-414, was sold to the federal government in September 1942 for \$4,000 (CCC 1942 *Deed Record* 274:171). Records associated with this transfer list no structures on the property at that time (CCC 1942 *Deed Record* 274:171; USBIA, AF 2561 1942:n.p.).

Summary

This site represents one of the most intact of the few Comanche homesteads that were owned continuously by Comanche settlers from allotment, in 1901, until government acquisition: 41 years, in this case. The evidence is unclear whether the site was occupied by Comanche or Euro-American settlers, although it is

⁷ Towickah was also known as Tip-pe-con-nic, and his lineage was three-quarters Comanche, one-quarter Hispanic (AAO 1901:1113). Comanche census records show he was a member of the Neithkawoofpi band in 1879, 1880, and 1883, the Cheevers band in 1885, and the Esahaupith band in 1892. He was not listed on the 1881 and 1888 censuses (Kavanagh n.d.:n.p.).

apparent that Nauwahconic, the original allottee, never lived there. The origin of the structures and other improvements remains a mystery. They probably date from an unrecorded tenant occupation of the area toward the end of Comanche ownership, though occupation by squatters is not out of the question; an "unauthorized occupant" is known to have used and perhaps lived on Werye's Homestead (34Cm-405) elsewhere on the military reservation.

Although this site has suffered negative impacts from military activities, it retains several features that remain in fair to good condition. For this reason, it has been recommended as eligible for inclusion in the NRHP. No further archeological work is recommended, but additional archival work and oral interview data should be collected in order to understand best its history. Site 34Cm-414 should also be actively preserved as a good example of a fairly intact early Comanche homestead at Fort Sill.

Site 34Cm-418 (Lonely Well Site)

This historic site is located on a hill approximately 100 m south of McKenzie Hill Road, just east of a two-track dirt road. Blue Beaver Creek lies approximately 1.2 km to the east. Tall grass covers the site, except in two linear areas stretching north-south that are virtually free of vegetation; these are apparently bulldozer scars. A thicket of small, thorny bushes covers a small area in the center of the site and may mark the remains of an infilled cellar depression. The site lies at an elevation of 399 m (1,310 ft) amsl and is mapped within the Granite Cobbly land soil type (USDA, SCS 1970).

Site 34Cm-418 was originally identified by a GMI survey crew in January 1991 (Peter and Weston 1993). During these investigations, a storm or root cellar depression, a second oval-shaped depression of unknown function, and the remains of a house foundation were identified, as was a light scatter of historic materials across the site area. When a GMI crew returned to the site in November 1995 to conduct test excavations, only the well and the storm/root cellar depression were identified. The second depression and house foundation were not found, although a scatter of building materials was identified at the purported house location. Evidence of bulldozing and similar activity suggests that these features may have been destroyed by heavy machinery after the site's original recordation.

The soil at this site consists of a grayish brown to brown loam, often quite gravelly, giving way to clayey subsoil or rhyolitic bedrock within 20-30 cm. Eight units (two 1-x-1 m and six 50-x-50 cm) were excavated to a maximum depth of 34 cm with an estimated .885 m³ of soil excavated. The two observed features were carefully measured and sketched. The findings were minimal, for only 38 artifacts indicating a late nineteenth/early twentieth-century presence were collected. Site dimensions are estimated at 90 m NW-SE by 42 m NE-SW; it encompasses approximately 3,780 m² (Figure 35).

Features

This site's most distinguishing feature is Feature 1, a concrete-and-stone well lying on the northern perimeter of the site. On its southeastern rim is the inscription "F.B. Jan. 21 1911," which was inscribed into the concrete when it was wet. A preliminary search of the archival records for this site did not indicate who "F.B." might have been; the last owner from 1940-1942 was a James Holloway. This feature is roughly octagonal in shape (that is, shaped like a square with the corners removed) and measures approximately 125 cm on a side; it is perhaps 10 m deep. A metal ring, surrounding the well opening, is imbedded in the concrete along the upper surface. Impact damage was noted on the west, northeast, and east sides.

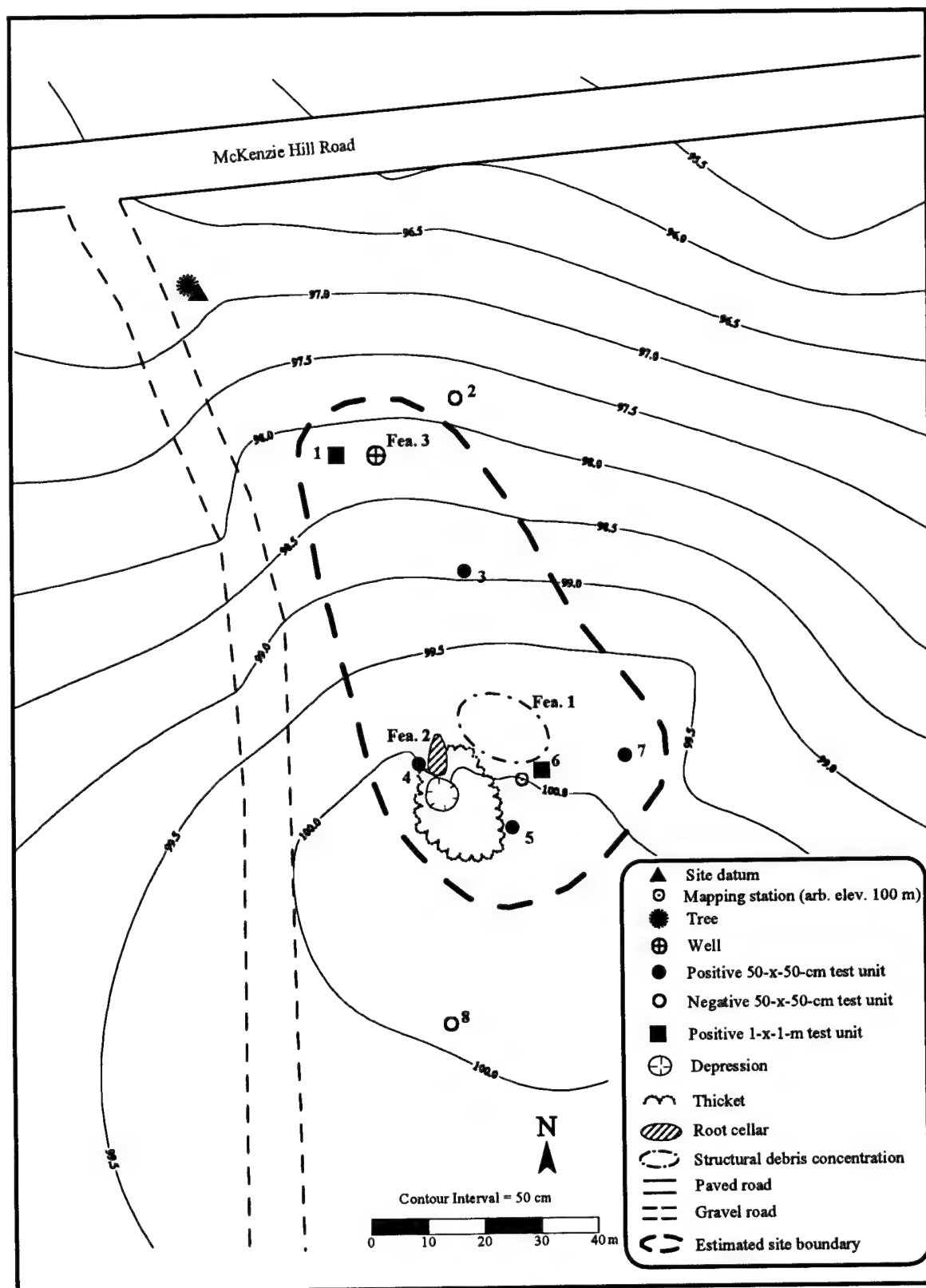


Figure 35. Plan map of the Lonely Well site (34Cm-418).

Feature 2 takes the form of a small depression measuring approximately 4 m NS by 2.25 m EW and 1 m deep. The sides of the depression are crumbling and several large stones lie in the north end. Several smaller stones, in a loose NW-SE alignment, were noted near the center of the feature. It is not known what function this feature served; it may have been a small root cellar or privy hole. It directly abuts the thicket that is suspected to cover the remains of an infilled cellar depression; considering this fact, it may represent the remains of a semisubterranean entranceway. Whatever the case, the feature is in fair condition at best.

The other features described in 1991, a second depression and the remains of a house foundation, were not relocated. A small scatter of historic artifacts and native stone which may have been used in a foundation was identified, but no true foundation. It is believed that this feature and the accompanying depression were destroyed by bulldozing in the intervening years.

Historic Artifacts Collected

The 38 historic artifacts collected from site 34Cm-418 consist of 21 glass fragments, 10 ceramics, and seven iron artifacts; all were collected from subsurface contexts. The finds are discussed by provenience in the following section.

Test Unit 1 (1-x-1 m)

Level 1, 0-10 cm bs

Ten artifacts were collected from this level. Six are glass fragments: one is from a milk glass bottle (1890-1960), two from one or more aqua glass fruit jars (1880-1935), and the others from post-1910 amber/brown bottle(s). The other four artifacts were undecorated whiteware fragments postdating 1890.

Test Unit 3 (50-x-50 cm)

Level 1, 0-10 cm bs

This unit yielded only one artifact: a blue-tinted ironstone fragment manufactured between 1850 and 1910.

Test Unit 4 (50-x-50 cm)

Level 1, 0-10 cm bs

Four artifacts were recovered from Test Unit 4. These include a manganese solarized bottle glass fragment (1880-1920s), an aqua glass fruit jar fragment (1880-1935), a clear bottle glass fragment (post-1910), and an undecorated whiteware fragment (post-1890).

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Test Unit 5 (50-x-50 cm)

Level 1, 0-10 cm bs

Three artifacts were recovered from this unit. One is a small stoneware fragment with a bristol slipped interior and exterior that was manufactured sometime after 1900. Also collected was a fragment of melted amber/brown bottle glass and a thirtypenny wire spike (post-1880).

Test Unit 6 (1-x-1 m)

Level 1, 0-10 cm bs

This excavation level produced three roofing nails (post-1880) and a clear glass bottle fragment (post-1910).

Test Unit 7 (50-x-50 cm)

Level 1, 0-10 cm bs

Test Unit 7 was the most productive unit at site 34Cm-418; 16 artifacts were collected from its upper 10 cm. Ten of these were fragments of glass, including five amber/brown melted glass fragments, three clear bottle glass fragments (post-1910), and two manganese/solarized shards (1880-1920s). In addition, three stoneware fragments were collected. One has a natural clay slipped interior/exterior (1875-1900), and two exhibit a salt-glazed exterior and a natural clay interior (1865-1900); one of the latter is a rim fragment of a large-mouthed jar with a rolled and flattened rim. Also recovered from this unit were an eightpenny wire nail (post-1880), a twentypenny wire nail (post-1880), and a piece of nondiagnostic iron wire.

Summary

Site 34Cm-418 represents the remains of a historic farmstead, possibly Comanche, occupied during the late nineteenth/early twentieth century. The site has suffered multiple impacts from military and earthmoving activities and erosion, having been left in poor condition. Several glass artifacts in the assemblage are melted, suggesting that the site has been burned. Given that the research potential of site 34Cm-418 is very limited, the Lonely Well site is considered to be ineligible for inclusion in the NRHP; no further testing or preservation are recommended.

Site 34Cm-425 (Rabbit Hill III Site)

This prehistoric site is located at the southern base of Rabbit Hill, less than 100 m west of site 34Cm-407. The area lies within Granite Cobbly land, at an elevation of approximately 381 m (1,250 ft) amsl. The ground surface slopes very slightly to the south and east. Although the site is located in an open scrub-oak forest, ground cover is all but nonexistent; a few patches of tall grass cling to those few areas retaining topsoil (usually in the vicinity of existing trees). The site area is heavily gullied and clayey subsoil is exposed

is most areas. Surface visibility approaches 100 percent in the gully areas but is limited elsewhere to dense leaf litter.

This site was originally identified by a Fish and Wildlife employee in the late 1980s, who notified the Fort Sill Archeologist, Louis Voge, Jr., of the find and turned over a small collection of flakes and bifaces. When GMI conducted a survey of the area in 1990, Mr. Voge informed the Project Archeologist of the site's existence and gave him the aforementioned artifacts. The GMI crew recorded 34Cm-425 as a light scatter of fine-quality chert debitage and tools, including several biface fragments and a Fresno-like arrowpoint, within an extensively eroded area (Peter and Weston 1993). The area was scheduled for revegetation and had been designated off-limits to vehicular traffic at the time; however, these restrictions were apparently not enforced.

When Rabbit Hill III was subjected to test excavations in late November 1995, the GMI crew found an Army task force bivouacked on the site and discovered that the site had suffered additional severe erosion since 1990. The site proved very difficult to locate, for erosion, artifact collection, and military activity had removed most of the cultural material. Eventually, the GMI crew located and piece-plotted only six surface artifacts, including both high-quality chert and low-quality quartzite pieces. None of these surface pieces was distinctive. During the course of the testing, seven .5-x-1-m units were excavated in areas retaining soil to a maximum depth of 20 cm; approximately .615 m³ of sediment was moved. All units proved sterile except for one, which produced one crude flake. The soil consisted of an eroded brown silty loam, quickly giving way to a reddish clay. As it currently exists, site 34Cm-425 covers approximately 1,386 m² (Figure 36).

Prehistoric Artifact Collected

The one flake collected from this site was from Level 1 (0-10 cm) of Test Unit 6. This piece is a crude secondary flake of Potter chert; it falls into Size Grade 1 (> 25 mm; see Appendix B) and may have been heat-treated.

Prehistoric Surface Finds

Three artifacts or artifact clusters were detected on the surface and piece plotted at 34Cm-425 (see Figure 36). Surface Find 1 was a very small bifacial reduction flake made of gray, fine-quality chalcedonic chert. Surface Find 2 was a group of three small flakes lying in a NW-SE trending linear pattern 1.2 m long. All three flakes, which are tertiary in nature, appear to have been struck from the same core; the material is identical to Surface Find 1. The flake on the northwest end of the scatter bore a utilized edge. Surface Find 3 was a small quartzite hardhammer flake.

Summary

Site 34Cm-425 is apparently the remains of a short-term base camp or lithic chipping station. This assessment is based upon the artifacts previously collected at the site, since the site's current condition precludes drawing any such conclusions. Although conservation actions were planned in 1990 in order to revegetate the site area, it is in even poorer condition now than it was when originally recorded; little if any contextual integrity remains. Further, the artifact assemblage is meager. For these reasons, the Rabbit Hill III site is believed to retain little research potential and is considered ineligible for inclusion in the NRHP. No further work is recommended.

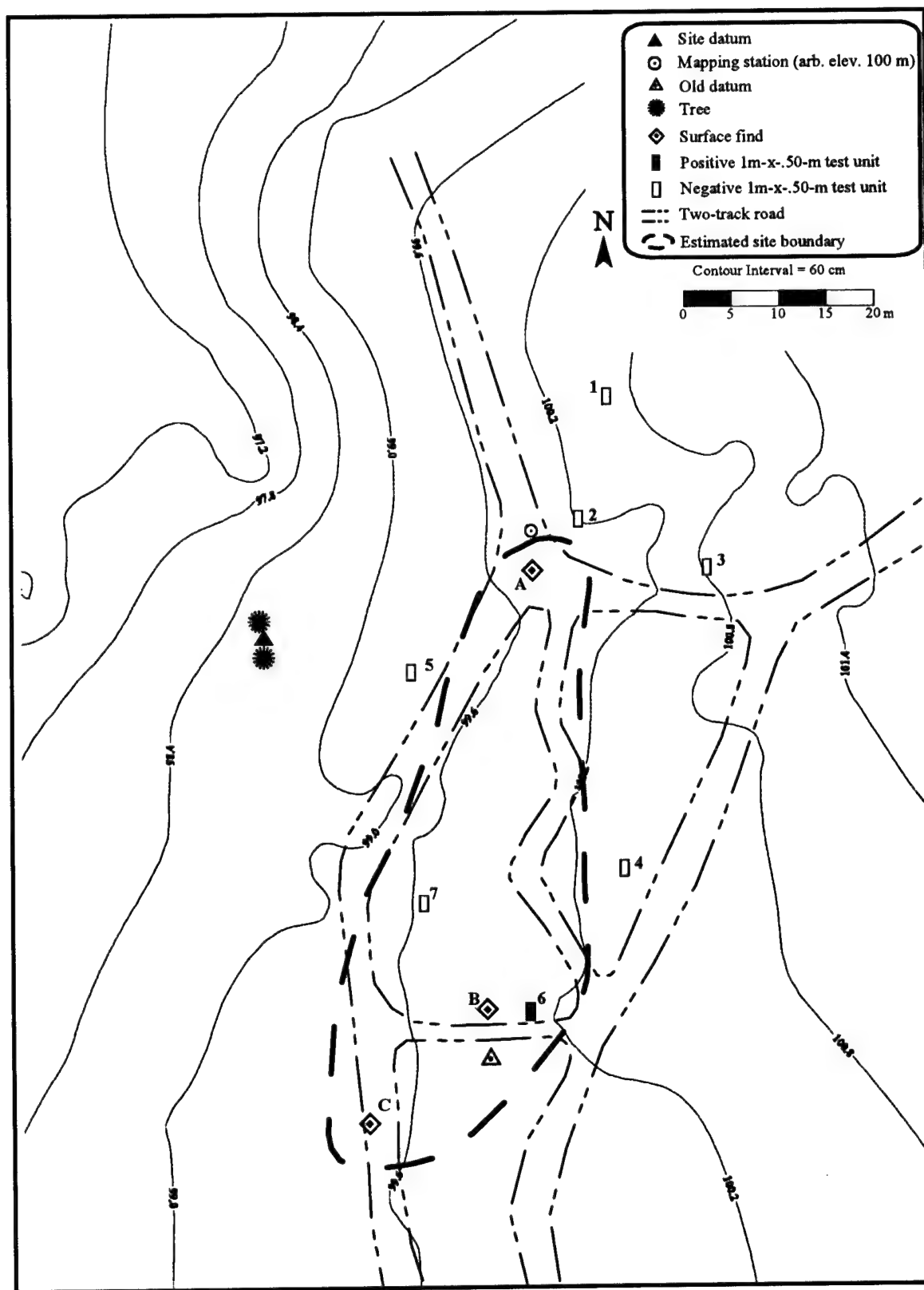


Figure 36. Plan map of the Rabbit Hill III site (34Cm-425).

Site 34Cm-428 (Chiwoonny Homestead Site)

This multicomponent site is located on the northern edge of the Fort Sill Military Reservation, immediately northeast of an Ark-La Gas Pipeline station and just east of the St. Louis-San Francisco Railroad line. A plowed field surrounds the site on the north, south, and east, and a firebreak lies to the west. The site occurs in an area mapped as Zaneis loam, 1-3 percent slopes (USDA, SCS 1970), at an elevation of 351 m (1,150 ft) amsl. Vegetation across the site includes several large oak trees with an understory of mixed grasses, forbs, and small shrubs. Surface visibility at the time of the test excavations was extremely low, given the thick vegetation cover and leaf litter.

The site is located on land which originally comprised part of a Comanche allotment; however, in 1926 it was necessary for Calvin Coolidge to order that a patent be issued to the heirs of the original allottee, one Chiwoonny, because the ownership of the property was in dispute due to clerical errors and omissions. By the time of government acquisition in 1942, the entire site area had apparently been sold to Euro-Americans. It was originally located by GMI in December 1990 (Peter and Weston 1993); at that time, four features were noted, including a brick and concrete foundation, a small brick feature then believed to be chimney remains, and a livestock trough. A brick-stone-and-mortar well was recorded next to a railroad track some 100-130 m north of the site, and a large depression with a large tree growing out of it was also noted but not recorded as a feature. In December 1995, a crew from GMI returned to the site to conduct test excavations. At that time, four features were identified, including all those previously mentioned, except for the well; this was not relocated in the purported location, although a storm drain extending from the beneath the railroad track was observed, and might have been misidentified as a well by previous researchers. The depression was recorded as an additional feature. All the features were carefully measured and sketched except for the depression.

The soil at this site consists of a brown to dark brown loam, giving way to a dark brown clay loam in some units. Eight units (two 1-x-1 m, and six 50-x-50 cm) were excavated to a maximum depth of 30 cm; approximately .95 m³ of soil was excavated. All but one of the units yielded artifacts. The testing resulted in the collection of only 48 artifacts; the assemblage includes 11 bottle and window glass fragments, a light bulb glass fragment, a fiesta-ware ceramic fragment, two wire fragments, one copper or brass rivet, 21 wire nails, one wood screw, and 10 prehistoric flakes. The evidence suggests both an early twentieth-century presence, as stated in the existing records, and an unexpected (though minimal) prehistoric component. As it currently exists, the site measures 45 m NS by 35 m EW, covering approximately 1,575 m² (Figure 37).

Features

Four features were identified during the data recovery process. Feature 1, which lies on the western edge of the site, consists of a fragmentary brick-stone-and-concrete foundation. At this time, little remains of the foundation except a north-south section of wall approximately 5 m long. Pieces of adjoining walls extend to the west from either end, and their layout suggests a square foundation. This is probably the remains of a house or outbuilding. Feature 2 is a mostly intact livestock watering trough, measuring 1.22 m NS by 2.98 m long. It is in good condition; the only damage noted was a 60-cm segment of the southern wall of the trough that had been detached and pushed into the feature.

Feature 3 consists of a large depression—possibly the remains of a cellar hole—which measures approximately 10 m NS by 7 m EW. A large tree grows from the southern end of the feature, suggesting that it has been open for more than 50 years. The depression may have underlain a house or outbuilding,

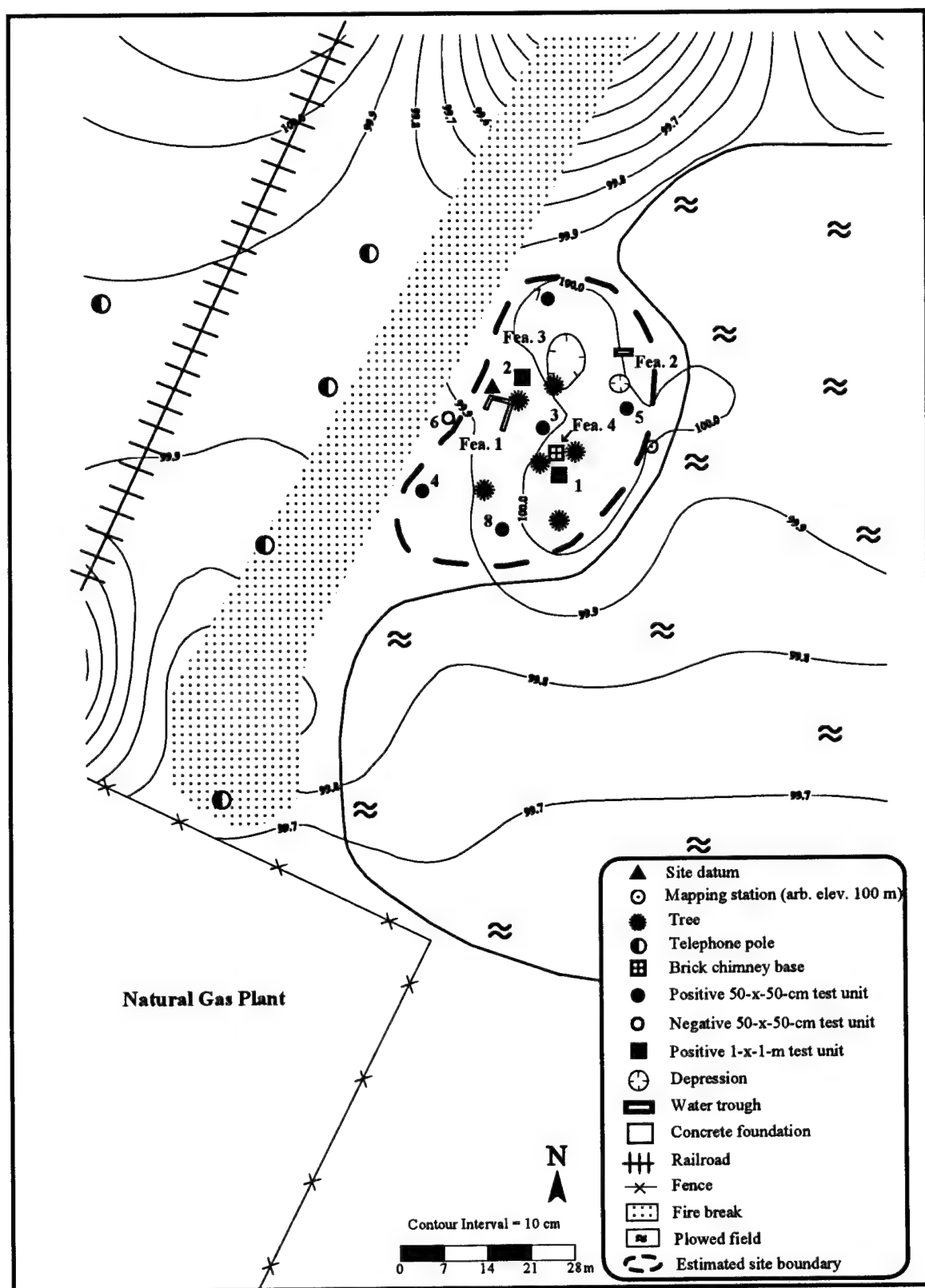


Figure 37. Plan map of the Chiwoonny Homestead site (34Cm-428).

although no construction debris was noted in its immediate vicinity. Feature 4, which lies 12 m due south of Feature 3, is a small, square, brick-and-concrete feature that may or may not represent the remains of a chimney or planter. Odd fragments of foreign material, including green and brown glass and what appears to be a white ceramic buckle, are incorporated into the concrete. The bricks are made of a glazed vitric material; one was stamped with "FRANCIS BOYNTON, OKLAHOMA," presumably the name of the manufacturer.

Historic Artifacts Collected

This site yielded 38 historic artifacts from seven test units. The distribution is broken down by unit in the following section.

Test Unit 1 (1-x-1 m)

Level 1, 0-10 cm bs

This excavation level produced seven artifacts. Two of these are wire nails (post-1880); one is eightpenny, the other sixteenpenny. The other five artifacts are amber/brown bottle glass fragments (post-1910). Four are plain fragments; the fifth is relief-molded.

Level 2, 10-20 cm bs

Four artifacts were recovered from this level. Among them is a twopenny wire nail (post-1880), a cobalt glass fragment (1890-1960), a fragment from an amber/brown glass bottle (post-1910), and a piece of fiesta whiteware with a green glaze (1930-1960).

Test Unit 2 (1-x-1 m)

Level 1, 0-10 cm bs

This excavation unit yielded six iron artifacts. Five are wire nails (post-1880): two are twentypenny, while three others fall into the sixpenny designation. The wood screw, which is not diagnostic, is grooved for a regular screwdriver.

Test Unit 3 (50-x-50 cm)

Level 1, 0-10 cm bs

Nine historic artifacts were collected from this level. Most were wire nails (post-1880): two are broken and nondiagnostic as to size, but of the remainder one is twopenny, three are sixpenny, and one is eightpenny. The ninth artifact collected is a fragment of clear bottle glass postdating 1910.

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Level 2, 10-20 cm bs

This level yielded two artifacts. One is a copper or brass rivet or brad with a grooved head; the other is a fragment of light green window glass.

Test Unit 4 (50-x-50 cm)

Level 1, 0-10 cm bs

Only one artifact, an aqua window glass fragment, was collected from this unit.

Test Unit 5 (50-x-50 cm)

Level 1, 0-10 cm bs

Three iron artifacts were collected from this excavation level: two nondiagnostic pieces of wire and an eightpenny wire nail (post-1880).

Level 2, 10-20 cm bs

This excavation level produced two artifacts. One is a fragment of frosted glass from a light bulb, made after 1930. The other is a wire nail fragment which postdates 1880.

Test Unit 7 (50-x-50 cm)

Level 1, 0-10 cm bs

This excavation level produced only one historic artifact, a wire roofing nail made after 1880.

Level 2, 10-20 cm bs

Two historic artifacts were collected from this excavation level. Both are broken fragments of wire nails (post-1880).

Test Unit 8 (50-x-50 cm)

Level 1, 0-10 cm bs

One historic artifact, a nondiagnostic aqua glass window fragment, was collected from this excavation level.

Level 2, 10-20 cm bs

This excavation unit also yielded one artifact, in this case a sixpenny wire nail (post-1880).

Prehistoric Artifacts Collected

Ten unmodified prehistoric artifacts were collected from site 34Cm-428. All 10 came from Test Unit 7, five each from Levels 1 and 2. Level 1 yielded three chert shatter fragments; one falls into Size Grade 5, and the others into Size Grade 6. A chert flake fragment also falls into Size Grade 6, as does the single Potter chert bifacial thinning flake.

Level 2 also produced three shatter fragments (two Size Grade 5, one Size Grade 6), one Size Grade 6 flake fragment, and one Size Grade 6 bifacial thinning flake. All five pieces are made of chert.

Archival Research

Site 34Cm-428 is located in the northeast quarter of Section 29, Township 3 North, Range 11 West. This quarter section was allotted to a Comanche woman recorded in government documents as Chi-woon-ny (allottee number 758) on 8 May 1901 (Anonymous n.d.:48; OTB 1901:50/32). Chiwoonny was born in 1849 (Otipoby Comanche Cemetery Committee 1988:20) but did not appear in Comanche census records until 1892. At that time she was a member of the Nahwatch band (Kavanagh n.d.:n.p.) and was married to the leader of the band. Nahwatch⁸ (allottee number 757) and Chiwoonny may have migrated to the area circa 1890. Nahwatch was not actually Comanche but a member of a Canadian tribe called the Ahah by the Comanche. The Ahah may have been Blackfoot (Otipoby Comanche Cemetery Committee 1988:38). Chiwoonny's father was a member of the same Ahah tribe (Kavanagh n.d.:n.p.), indicating that Nahwatch and Chiwoonny met and married while still with the Ahah.

Nahwatch and Chiwoonny were together allotted all of Section 29 north of the boundary of Fort Sill. The transfer was not recorded with the county clerk until 25 August of that year (CCC 1901 *Deed Record* 211:447), two weeks after a placer mine claim had been filed on the east half of the northeast quarter of the section, the quarter section allotted to Chiwoonny. The first of two records recording this claim, known as the Jennie Placer Mining Claim, did not describe the minerals thought to be located there, but a later document listed several petroleum resources (CCC 1901 *Miscellaneous Record* 1:217; CCC n.d. *Miscellaneous Record* 3:131).

Although the instrument recording the transfer of the property from the United States to Chiwoonny (CCC 1901 *Deed Record* 211:447) noted she was living on the Kiowa, Comanche, and Apache reservation at that time, it is not known whether she was living on this property either permanently or temporarily. She could have been living on the property allotted to Nahwatch, but, as discussed below, she and her husband were probably living in or near a building on the northeast quarter of Section 29, possibly now indicated by the remains at site 34Cm-428.

⁸ Also spelled Nah-wats, he was born about 1853 (Otipoby Comanche Cemetery Committee 1988:20). As "one of the first Christian converts at the Comanche Reformed Church" (Otipoby Comanche Cemetery Committee 1988:38), he may have been an important influence among the Comanche who chose the "white road" over their traditional beliefs and lifestyle.

In 1915, Nahwatch seems to have been fairly well-off. That year he owned 27 horses, six mules, 67 head of cattle, eight hogs, seven pigs, 20 chickens, and five turkeys, as well as one wagon, two buggies, three cultivators, and one plow, bay-binder, mower, rake, lister, harrow, and disk harrow. He had planted 35 acres (14.2 ha) of corn, eight acres (3.2 ha) of oats, and 81 acres (32.8 ha) of Kaffir corn in 1914, and put up 300 bales of wild prairie hay the same year. He also had "a poor 3 room house" (Kiowa Agency 1915b:n.p.) and a very old barn. A hand-written addition to the record giving this information indicated that Nahwatch was then in poor health and that two wells on the property were dry (Kiowa Agency 1915b:n.p.). Nahwatch died in June 1918 and Chiwoonny inherited at least half and possibly all his property (one instrument discussing the inheritance indicates Chiwoonny only inherited 81.28 acres [32.9 ha] from Nahwatch but does not state that the remaining 80 acres [32.4 ha] were passed onto other heirs, perhaps indicating Nahwatch had previously sold the north half of the northwest quarter of Section 29).

Chiwoonny died in March 1921, with no children surviving her (USBIA, AF 758 ca. 1923:n.p.; USBIA, AF 758 1923a:1). In a will dated 23 February 1917, Chiwoonny left all her property to the children of Nahwatch's deceased sister (USBIA, AF 758 1917:n.p.), whom Nahwatch and Chiwoonny had raised since the deaths of that sister and her husband (Chaat n.d.:1). A notation in records discussing the transfer of the property said that "[t]here are no homestead rights involved" (USBIA, AF 758 1923a:1), but the significance of the phrase is not known⁹. In 1923, when the transfer of the property to the heirs was recorded in the allotment record at the Anadarko Agency Office, there was a three-room house, a well, and about two miles (3.2 km) of fence in the northeast quarter of Section 29. The land was valued at \$2,400 and the improvements at \$600 (USBIA, AF 758 1923b:n.p.). Fifty-five of the 81 acres (32.8 ha) Chiwoonny had inherited from Nahwatch and still owned at the time of her death were under cultivation, and a barn and about two miles (3.2 km) of fence had been placed on the property as well. That land was valued at \$3,450 plus \$200 in improvements (USBIA, AF 758 1923c:n.p.). Therefore, assuming Chiwoonny was living in the structure rather than using it for storage and living in traditional housing, her residence at the time of her death was likely the structure in the northeast quarter of Section 29. Two archeological sites with historic components are currently known to exist in this quarter section—34Cm-428 and 34Cm-430. Either could be the remains of the site occupied or used by Chiwoonny.

The four nieces and nephews that inherited the Chiwoonny and Nahwatch property were Maud, allottee number 765; Sonauquot Rachael, allottee number 766; Robert, allottee number illegible; and Ralph Chahtinneyackque, allottee number 767 (USBIA, AF 758 1917:n.p.; CCC 1926 *Deed Record* 211:457). At least three of the heirs had been allotted property in Section 20 (Anonymous n.d.:48; CCC 1901 *Deed Record* 211:447). The heirs' interests in the west half of the northeast quarter of Section 29, the south half of the northwest quarter of the same section, and the 15 acres (6.1 ha) in the southeast quarter of the section north of the Fort Sill boundary were consolidated under the ownership of Maud and her husband Wells Franklin Blevins in 1927 (CCC 1927 *Deed Record* 211:392).

Maud was approximately 38 years old at that time (USBIA, AF 758 ca. 1923:n.p.). As a child she attended the Apache Mission at Fort Sill and the Fort Sill Indian School, devoting much of her educational efforts to learning elements of what some called the "white road," especially Protestantism. She learned to translate and "sang and recited bible verses in [Comanche?] Reformed Churches in Michigan. . . . [She later became] a charter member of the Comanche Reformed Church" (Otipoby Comanche Cemetery Committee 1988:34-35). In 1924, she married Wells Franklin Blevins, who had just that year come to Lawton from North Carolina (Deveney 1992:n.p.; Otipoby Comanche Cemetery Committee 1988:34).

⁹ Possible explanations include: the heirs all had their own allotments, there was no one then living on the property, or there were only tenants living on the property.

One week after the ownership of the property was consolidated, Maud and her husband took out a mortgage on the 161 acres (65.2 ha) for \$1,500 (CCC 1927 *Deed Record* 197:320). The following year the Blevins took out a second mortgage of \$500 on 87 acres (35.2 ha) encompassing the area where site 34Cm-428 is located (CCC 1928 *Deed Record* 210:337). A \$1,300-mortgage taken out on approximately the same tract in 1929 (CCC 1929 *Deed Record* 221:20) indicates the Blevins had made some improvements to the property or that the previous \$500-mortgage was given for an amount less than the value of the property in 1928.

The Blevins transferred the portion of this property containing site 34Cm-428 to Evelyn N. and Austin F. Lane for an unspecified amount in August 1930 (CCC 1930 *Deed Record* 227:387). The Lanes owned the property until the government acquired it in December 1942. The Lanes transferred their 60 acres (24.3 ha) to the U.S. for \$1,200 (CCC 1942 *Deed Record* 275:397).

Summary

This site represents an original Comanche allotment that appears to have been occupied continuously from allotment until 1930, whereupon it was purchased by Euro-Americans and occupied until government acquisition. Unfortunately, the scarcity of materials limits the site's research potential. Site 34Cm-428 is recommended as ineligible for inclusion in the NRHP and is not recommended for further testing.

Site 34Cm-476 (Lawton Aqueduct Site)

This minimal prehistoric site lies in a very marshy area immediately east of a small drainage of East Branch Wolf Creek; the marsh was apparently created by the drainage and the leaking aqueduct. A large water main extends upward from the western margin of the site, which lies at an elevation of approximately 354 m (1,160 ft) amsl. Vegetation across the site consists of mesquite and juniper trees, sparse mixed grasses, and marsh plants such as cattails; surface visibility varies from good to excellent. The soils are mapped as Port-Slickspots complex (USDA, SCS 1970).

Site 34Cm-476 was originally identified by a GMI survey crew in September 1992 as a light scatter of Ogallala quartzite flakes located on a small knoll and within a small eroded area (Weston et al. 1995). A few flakes were observed scattered around the water main, suggesting that construction of the aqueduct had impacted the southern and western portions of the site; historic cultural material, associated with this construction, was also observed. In November 1995, a GMI crew returned to the site to conduct test excavations. Open areas of the site were found to be covered with a thin, white alkaline crust, which probably represents residue from the leaking aqueduct; Lawton tap water tends to be quite saline. This has developed since the original discovery of the site in 1992. During the testing, a total of seven units—a 1-x-1-m unit and six 50-x-50-cm units—was excavated on and around the knoll to a maximum depth of 30 cm; in several cases, excavation ceased because the unit began filling with water. The soil varied from a wet loam to a wet clay. Only the 1-x-1-m unit produced artifacts: three crude quartzite fragments. The site currently measures about 40 m EW by 18 m NS, or 720 m² (Figure 38).

Prehistoric Artifacts Collected

Three large Potter chert flakes were collected from subsurface contexts in Test Unit 4, the single 1-x-1-m unit excavated at the site. One Size Grade 1 flake (> 25 mm; see Appendix B) was collected from Level

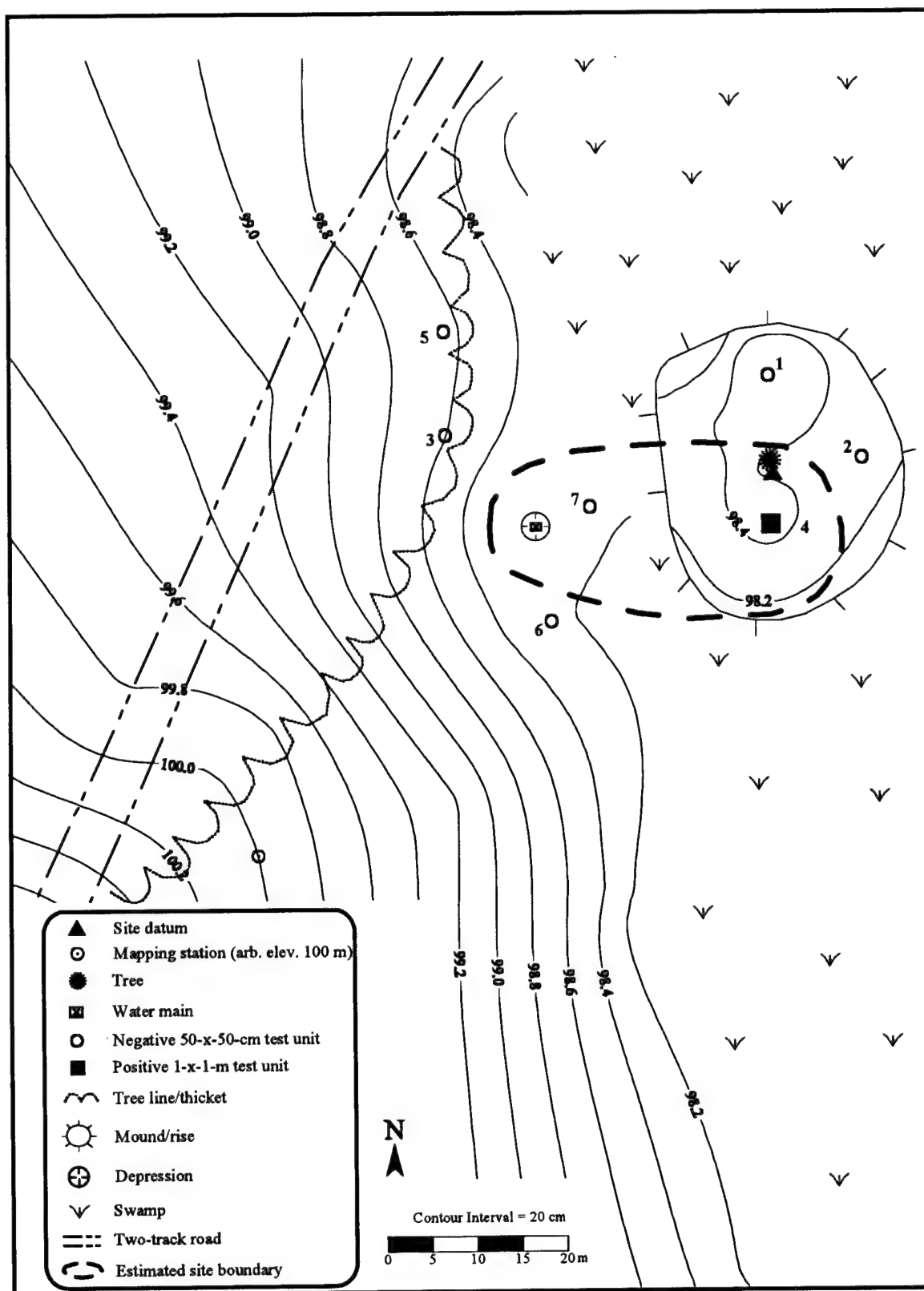


Figure 38. Plan map of the Lawton Aqueduct site (34Cm-476).

2, 10-20 cm bs. The other two flakes came from Level 3, 20-30 cm bs; both fall into Size Grade 3. All three artifacts are apparently unmodified and bear no evidence of thermal alteration.

Summary

The Lawton Aqueduct site represents the remains of a small, prehistoric hunting or lithic reduction station located on a small knoll on the edge of a marsh. The site has been disturbed by construction of the aqueduct, and its contextual integrity is poor. Given its inferior condition and its extremely limited assemblage, site 34Cm-476 it is not considered eligible for inclusion in the NRHP.

Site 34Cm-488 (Daly Hill Site)

This historic site is located on the southern slope of Daly Hill, immediately west of McKenzie Hill and approximately 200 m north of McKenzie Hill Road. The elevation varies from approximately 390 m to 393 m (1,280-1,290 ft) amsl; the ground surface slopes gently to the south. An open forest, composed of oaks and other hardwoods, blankets the southeast quadrant of the site; understory consists of a sparse cover of forbs and short grasses. Most of the site is covered with mixed grasses, spotted with the occasional oak or mesquite tree. Ground visibility is near zero in the grassy areas but approaches 50 percent in the forested area. The soils are mapped as Limestone Cobbly land (USDA, SCS 1970).

The agricultural complex includes an old limestone quarry and four distinct features, including two crumbling concrete foundations and the remains of a concrete well feature, in association with a low density scatter of historic artifacts; however, what truly sets it apart is the intact storm shelter that is built into the base of Daly Hill. The shelter remains in remarkable condition and is still suitable for its original purpose. This site was originally located by GMI in 1992; at that time, all the aforementioned features were noted (Weston et al. 1995). In November 1995, a crew from GMI returned to the site to conduct test excavations. At the time, an Army task force was bivouacked on part of the site. Each of the features was carefully measured and sketched, and eight units (two 1-x-1 m, and six 50-x-50-cm units) were excavated to a maximum depth of 30 cm. The soil consisted primarily of a dark brown loam overlying a dark brown clay loam. A total of 129 artifacts indicating an early twentieth-century presence was collected. The site is estimated to measure 60 m NS by 122 m EW (7,320 m²; Figure 39).

Features

Four features and an old limestone quarry were identified during the course of testing (see Figure 39). The quarry is a typical localized quarrying area: it consists of a large open pit measuring 25 m NS by 20 m EW, and is currently partially filled with plant matter and water. The largest and most complete of the four features is a virtually intact storm shelter, which is constructed of concrete, mortar, and native limestone (perhaps from the quarry 25 m away), and remains quite sturdy (Figures 40 and 41). This feature lies near the center of the site and was built into the side of Daly Hill; a smaller stone-block-and-concrete-slab structure extends from its southwest corner.

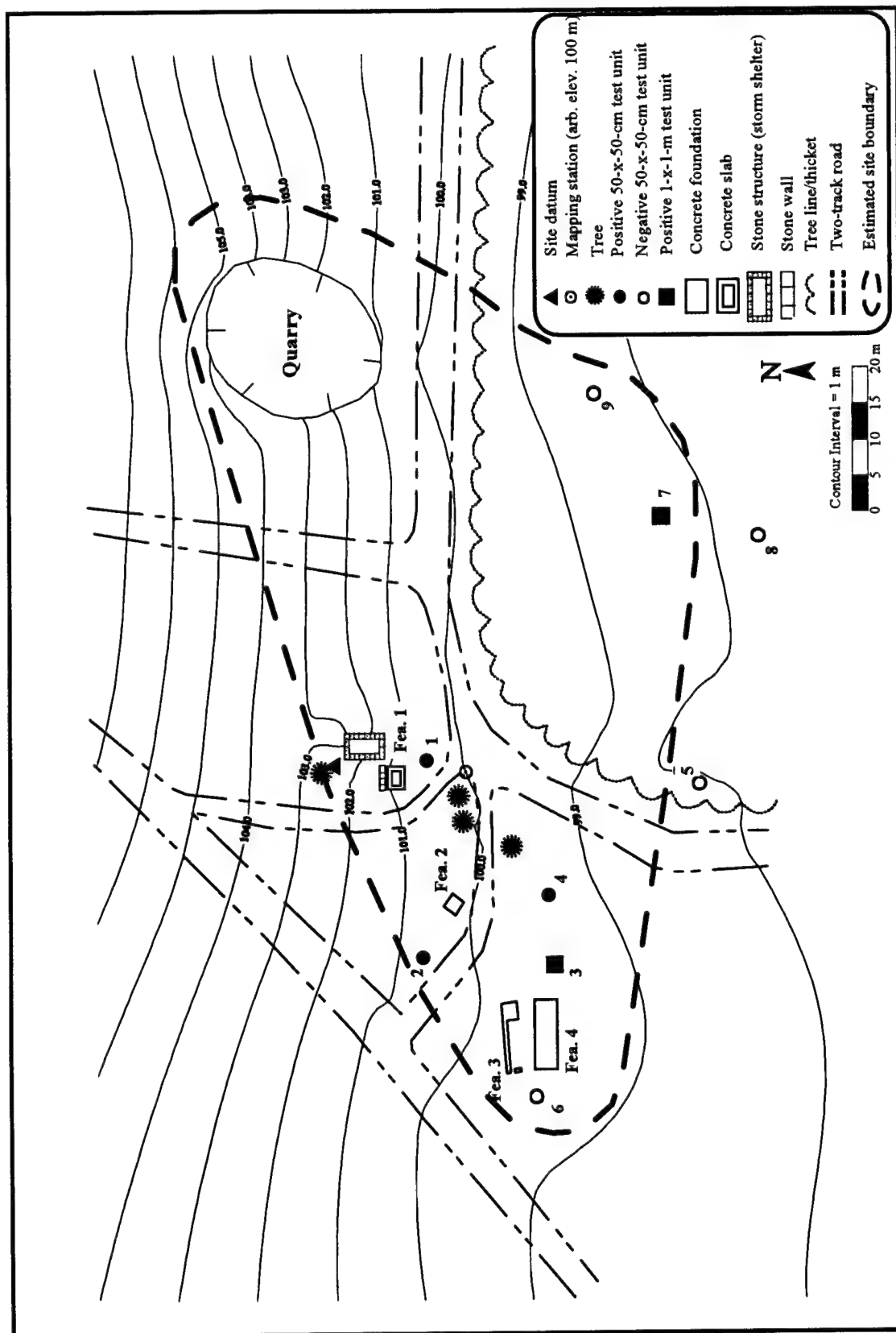


Figure 39. Plan map of the Daly Hill site (34Cm-488).



Figure 40. Photograph of Feature 1 at site 34Cm-488.

The cellar is a stone-walled and concrete-roofed building. The walls of the feature are constructed of rough field stone, roughly-coursed and set in a gray cement mortar that utilizes local aggregate. The interior faces of the walls are slightly irregular while the exterior wall faces are very irregular, and covered with earth on three sides. Interior measurements are 3.4 m (11 ft 3 in) NS by 2.7 m (8 ft 9 in) EW; the interior height is 2.2 m (7 ft 3 in). The masonry doorway measures 84 cm (2 ft 9 in) wide by 205 cm (6 ft 2 in) high, and is located in the south wall. The roof of the structure is vaulted and constructed of 13-cm (5-in) thick, cast-in-place concrete reinforced with 2.5-cm (1-in) steel cables. The concrete was formed using 30-cm (12-in) wide boards. A five-gallon metal bucket was used as a vent stack near the rear of the building. The bucket was set atop the vaulted roof and poured full of concrete, with the exception of a 15-cm (6-in) diameter metal stove pipe set in the center of the bucket. The floor of the cellar is smooth-finished concrete. The original door is missing from the masonry opening.

Although the shelter is doorless and has been ill-used by the military (including graffiti and latrine use), it is in very good condition, and indeed was the most complete feature encountered during the testing program discussed in this report. In size, configuration, and detailing, this cellar is similar to the cellar noted at site 34Cm-414. It alone may be considered eligible for listing on the NRHP, under Criterion C (see Chapter 4).

Feature 2 lies 20 m southwest of Feature 1. This is the crumbling remains of a concrete box with walls 20 cm thick and 15 cm high. Only the north and east walls are intact; the remainder of the feature has been displaced by heavy machinery. This was initially recorded as a well (Weston et al. 1995); however, if it was a well, it has been filled. Large rocks were observed on the bottom of the feature, which lies approximately even with the ground surface. The feature measures 1.2 m square.

Feature 3, on the western edge of the site, consists of the remnants of a concrete wall/slab feature totaling 9.8 m EW by 3 m NS. The western end consists of a concrete wall and slab structure 2.2 m EW by 3 m NS;

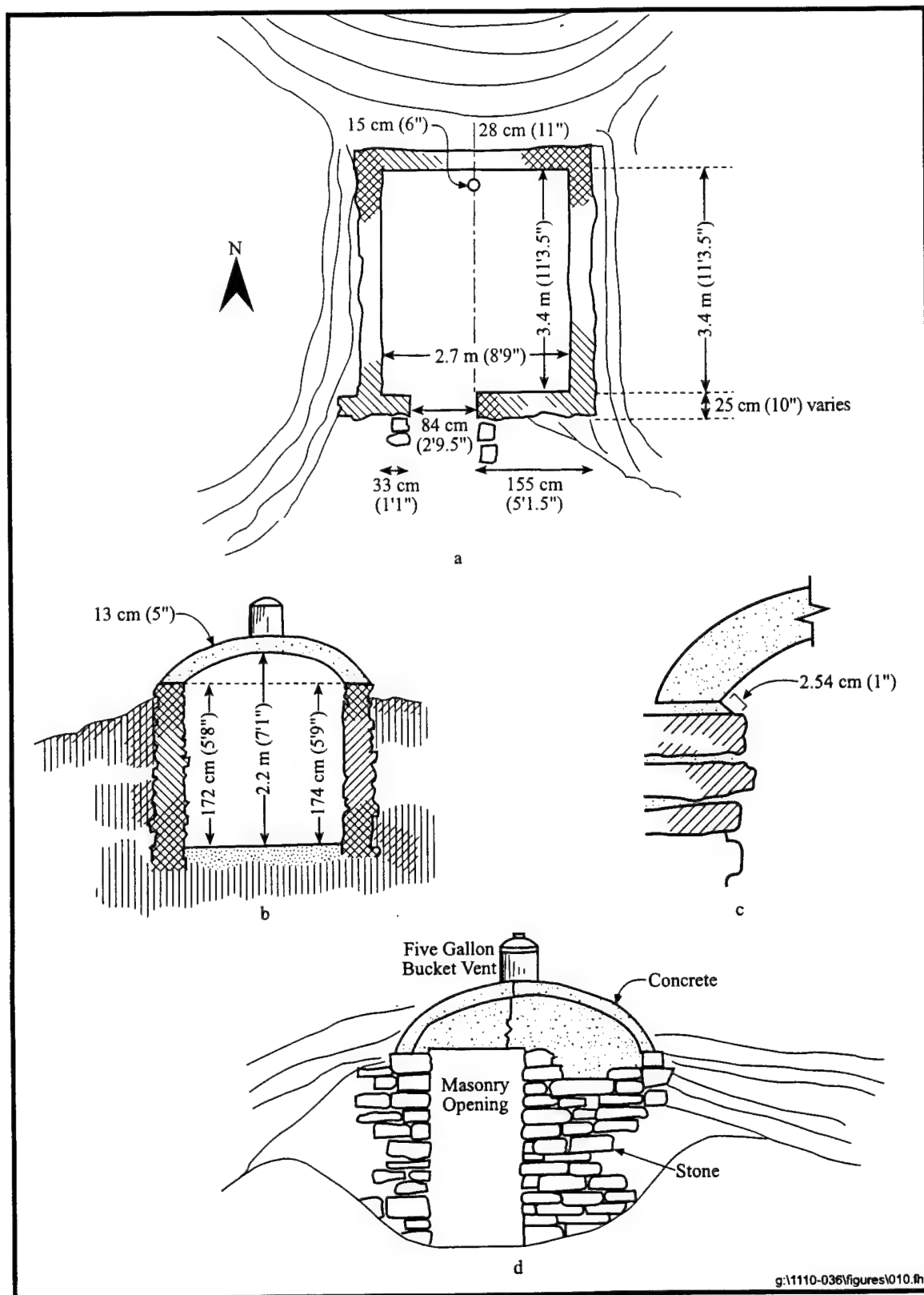


Figure 41. Views of the storm shelter at site 34Cm-488: (a) plan view; (b) cross section; (c) detail, head of wall section; (d) profile, south wall.

a 6.8-m-long concrete wall some 50 cm thick and 20 cm high extends from its northwest corner. A small chunk of similar concrete wall with a metal sill bolt in top, measuring perhaps 70 cm long, lies 1.5 m south of the westernmost end of the east-west wall and is oriented north-south, suggesting that this was once part of a north-south wall connected to the intact wall. There is no sign that a southern wall ever existed. This feature probably served as a foundation for an outbuilding, with the wooden superstructure attached with sill bolts.

Immediately south of Feature 3 is another linear foundation feature, Feature 4. This one is more conventional: it consists of a rectangular box of concrete walls 15 cm thick and 15 cm high, with metal sill bolts set upon its upper rim at regular intervals. The feature is 9.7 m long (EW) and 2.4 m wide (NS). It seems to have served a similar purpose as Feature 3, and indeed with that feature may represent distinct elements of the same building foundation.

Historic Artifacts Collected

One hundred and twenty-nine historic artifacts were collected from five of the eight shovel tests excavated at 34Cm-488. The finds are broken down by unit of origin in the following section.

Test Unit 1 (50-x-50 cm)

Level 1, 0-10 cm bs

This excavation level yielded two artifacts: a undecorated whiteware rim fragment (post-1890) and a post-1910 clear bottle fragment.

Level 2, 10-20 cm bs

Three artifacts, all of them bottle glass fragments, were collected from this unit. Two are made of manganese solarized glass (1880-1920s); the other is clear and postdates 1910.

Test Unit 2 (50-x-50 cm)

This very shallow unit was taken only to 15 cm before limestone bedrock was encountered. Only one artifact was collected from the upper 10 cm bs. This consists of a large iron spike which had been bent into a J-shaped hook (post-1880). The head of the spike was broken off.

Test Unit 3 (1-x-1 m)

Level 1, 0-10 cm bs

This unit, which was excavated approximately 3 m east of Feature 4, was the most productive on the site; indeed, this excavation level produced most of the artifacts collected from 34Cm-488. Like Test Unit 4 at

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site 34Cm-414, which was also located next to a foundation feature, this unit produced a great deal of construction material—particularly wire nails (post-1880). Included in the assemblage are 11 threepenny nails; one fourpenny nail; nine sixpenny nails; one sevenpenny nail; 43 eightpenny nails; four sixteenpenny nails; a forty penny iron spike; and 12 broken nails of unknown size. Four fragments of a tin can (post-1900) as well as one fragment of wire were also collected from this level.

Level 2, 10-20 cm bs

Eleven artifacts, mostly wire nails, were collected from this excavation level. These include one twopenny nail, one fourpenny nail, a sixpenny nail, and two eightpenny nails. Also collected were a wire fragment, an indeterminate piece of cast iron, a fragment of nondiagnostic window glass, two clear glass bottle fragments (1910-1940), and an undecorated whiteware rim sherd (post-1900).

Test Unit 4 (50-x-50 cm)

Level 1, 0-10 cm bs

Four artifacts were collected from this unit. One is a fragment of a dry interior/exterior clay flower pot; also present is a clear glass bottle fragment postdating 1910. Two of the artifacts are fragments from a modern, army ration can.

Level 2, 10-20 cm bs

Two wire nails (post-1880) were collected from this level. One is of the eightpenny denomination; the other is an nondiagnostic fragment.

Level 3, 20-30 cm bs

One twelvepenny wire nail (post-1880) was collected from this excavation level.

Test Unit 7 (1-x-1 m)

This unit, which was excavated in the wooded area near the Army bivouac, produced five artifacts from its uppermost level (0-10 cm bs). Three are Army ration-can fragments which bear the legend "B-3 UNIT/CRACKERS." The other two artifacts include a post-1930 emerald bottle fragment (possibly from a soda bottle) and an nondiagnostic fragment of iron wire.

Faunal Material Collected

One faunal specimen was collected at this site, from the uppermost level of Test Unit 7. This piece proved to be a peripheral shell fragment from a turtle (*Terrepenne* sp.), probably from a box tortoise (*T. ornata*).

Archival Research

Site 34Cm-488 is located in the southeast quarter of Section 7, Township 2 North, Range 12 West. This quarter section was awarded only a matter of days after the Kiowa, Comanche, and Apache Reservation was opened to settlement in 1901, and the lottery for homesteads began. On 23 August of that year, Diedrick J. Freese was issued receipt number 1852 for the southeast quarter of Section 7 (OTB 1901:50/82). In order to have been awarded this property, Freese had to participate in the lottery by which this land was opened to settlement (see Chapter 3). Land Office files archived at the National Archives contain a copy of the receipt issued to Freese on 31 July 1901; Freese was the 1,990th person to draw a number in the Lawton district, in which approximately 6,500 claims were available (Richards 1901:n.p.).

Freese had emigrated from Germany with his father, Richard C. Freese, in 1850, when Diedrick was approximately two years old. His father became a naturalized citizen of the United States in 1856 in Illinois (Freese 1901a:1). The younger Freese filed his claim on the southeast quarter of the section on 23 August 1901 (Freese 1901b:n.p.). Although he needed to be a citizen of the United States to file a claim, Freese apparently did not officially become so until 9 March 1904 (United States of America 1904:n.p.).

Between August and November, Diedrick Freese and his family (which in 1904 consisted of his wife and their five children) may have lived in a dugout that Vivian Bryan noted was located on the property in 1904, but it is possible the dugout was constructed later and for other reasons. By November, the Freese family had completed a house, which then became their permanent residence. The house was described as a box structure with one and one-half stories, measuring 16-x-32 ft (4.9-x-9.75 m). Freese had built a 20-x-30-ft (6.1-x-9.1-m) barn, cattle shed, hen house, and well on the property by 1904, and had installed about three miles (5 km) of three-strand wire fence. The family raised crops on about 30 acres (12 ha) in 1902 and 1903, increasing the amount of land under cultivation by five acres (2 ha) in 1904; they also had a small orchard with about 100 fruit trees. In 1904, the value of the property and improvements was estimated at between \$650 and \$700 (Baughman 1904:n.p.; Bryan 1904; n.p., Freese 1904:n.p.).

Freese had made sufficient improvements by 1904 to be permanently awarded the property.¹⁰ A receiver's receipt for the quarter section, designated as final certificate number 3066, was issued to Freese in April 1904 (CCC 1904 *Deed Record* 17:382). One year later, in April 1905, Freese was issued the patent to the property (CCC 1905 *Deed Record* 11:434). On the same day that the receiver's receipt for the quarter section was issued, Freese and his wife, Ettie E., took out two mortgages on the property, totaling \$735 (CCC 1904 *Deed Record* 10:546). The couple took out four additional mortgages, totaling nearly \$1,800, between 1907 and 1909 (CCC 1907 *Deed Record* 69:57; CCC 1909 *Deed Record* 10:571; CCC 1909 *Deed Record* 10:454; and CCC 1908 *Deed Record* 10:569). The Freeses sold the 160 acres (64.75 ha) to Theodocia Coxen in August 1909 for \$5,600 and the payment of the \$1,000 still due the mortgagors (CCC 1909 *Deed Record* 108:305). The property was mortgaged for \$1,000 again by O. L. and Theodocia Coxen in November 1910 (CCC 1910 *Deed Record* 85:547). The Coxens took out another mortgage in 1911 for \$800 (CCC 1911 *Deed Record* 103:323). Both of these instruments noted that the Coxens did not live in Comanche County, so any residents of the old Freese homestead during this period would have been living there as tenants.

¹⁰ The agreement that opened the lands of the Kiowa, Comanche, and Apache Reservation in Oklahoma, reached in 1900, stated in Article 10 that homesteaders would pay a small filing fee when they first received the allotment, and that if they resided on the property and made sufficient improvements within 14 months they could purchase the land outright for \$1.25 per acre (about \$3.09 per ha), which would repay the government for its purchase of the land (Dale and Rader 1930:543; McReynolds 1954:289).

Foreclosure proceedings were taken against all those who had or may have had any interest in the property in March 1912, the foreclosure prompted by the Coxen's failure to make mortgage payments (Comanche County District Court 1912:n.p.). Unfortunately, no mention of structures was located in either the court records or the sale advertisement included in the district court file. In December 1913 the property was sold by the sheriff; at that time the principal was \$1,334, but the high bid of only \$1,200 was received from a representative of one of the mortgage companies. The quarter section was then signed over to W. C. Stevens (CCC 1913 *Deed Record* 122:527-528). W. C. and wife Alice E. Stevens sold the property the same day to Ed K. Caldwell for \$3,000 (CCC 1913 *Deed Record* 150:422). Caldwell, a single male, sold the property for \$4,500 in 1915 to Otto Jones (CCC 1915 *Deed Record* 155:62). That the land seems to have increased significantly in value may have been due to improvements effected by Caldwell or to the success of the Stonewall Oil and Gas Company, which took out an oil and gas lease on the property in the spring of 1914 (CCC 1914 *Deed Record* 143:391). Jones and his wife Norma, Comanche County residents, retained ownership of the property until 1941, when they sold the entire south half of Section 7 to the U.S. for \$7,250 (CCC 1941 *Deed Record* 268:81).

Summary

Although this site has suffered negative impacts from military activities, it retains one feature, the storm shelter, which remains in good condition. This feature—which probably dates from the Caldwell or Jones ownership of the land—should be preserved, although the remainder of the site, given its contextual integrity, is not recommended for preservation or further work. At the very least, the storm shelter should be fenced to keep intruders out.

CHAPTER 7

SUMMARY OF RESULTS AND RECOMMENDATIONS

by
Floyd B. Largent, Jr., and Duane E. Peter

INTRODUCTION

This chapter summarizes the results of both the 1995 Fort Sill coring program and the subsequent site testing program. It provides recommendations concerning the proposed use of the cored area, as well as recommendations for the National Register eligibility and management of the excavated sites. Later sections of the chapter address research concerns such as site function and origin.

THE CORING PROGRAM

In October 1995, 25 core holes were excavated with a Giddings-style truck-mounted coring rig within the 20-acre tract of the proposed new truck-wash facility (see Chapter 5 and Appendix A for more details). No buried archeological sites were identified, but a significant amount of data concerning the geomorphic history of the project area was revealed by the coring process. The fieldwork provided ample evidence of an energetic floodplain environment, molded by extensive alluvial activity which has resulted in a great deal of stratigraphic variability; it is rare that archeological sites survive such conditions intact. In most cases, the depth of the sandstone bedrock exceeds 9 m (30 ft) below the surface, although the water table averages about 5 m (16.4 ft) below the surface. The minimum depth observed for the water table was approximately 3.5 m (11.5 ft).

From an archeological standpoint, there seems to be little reason not to construct the truck-wash facility at this location. No subsurface archeological sites were detected in the project area, although the extant World War I howitzer emplacements should be avoided. Additional archeological investigations are unnecessary, considering the lack of cultural resources found during the coring program.

THE ARCHEOLOGICAL SITE TESTING PROGRAM

Test excavations were conducted at 15 archeological sites in November and December of 1995 to obtain data necessary for a final determination of National Register eligibility (see Table 3). Six sites (34Cm-42, 34Cm-58, 34Cm-235, 34Cm-407, 34Cm-425, and 34Cm-476) contain prehistoric components only, and six (34Cm-107, 34Cm-401, 34Cm-405, 34Cm-414, 34Cm-418, and 34Cm-488) contain historic components only. Three sites (34Cm-239, 34Cm-315, and 34Cm-428) proved to be multicomponent in nature, with both

prehistoric and historic components. Eighteen site components (nine historic and nine prehistoric) were identified. All 15 sites exhibited extensive prior disturbance, due primarily to military activity and subsequent erosion. Only one site, 34Cm-414, exhibits sufficient contextual integrity and/or cultural significance to be recommended as eligible for inclusion on the NRHP. This site should be actively preserved. A second site, 34Cm-488, is ineligible, but includes an intact storm shelter in excellent condition which should be preserved and protected. None of these sites is recommended for Phase III mitigation at this time. The remaining 13 sites are considered to be ineligible for inclusion on the NRHP based on these test excavations and are not recommended for further work or preservation.

PREHISTORIC SITE SUMMARY

Nine of the sites tested during the 1995 data recovery program contain prehistoric elements (34Cm-42, 34Cm-58, 34Cm-235, 34Cm-239, 34Cm-315, 34Cm-407, 34Cm-425, 34Cm-428 and 34Cm-476; see Table 3). Most of the sites apparently represent short-term base camps, hunting stations, or lithic procurement/reduction areas. Temporally diagnostic artifacts were identified at only two of these sites; both 34Cm-58 and 34Cm-239 produced fragmentary Archaic period projectile points, which were unfortunately not diagnostic to a specific Archaic subperiod. Previous research at 34Cm-58 indicates a Plains Village period occupation in addition to that of the Archaic period. Both Archaic and Plains Village components are also known for site 34Cm-407. Site 34Cm-425 has also yielded Plains Village artifacts. The limited temporal diagnostics of these eight sites reflect the general trend of the larger data base at the Fort Sill Military Reservation, which now includes information on 111 sites, 41 of which contain a total of 66 diagnostic components (26 single component sites and 15 multicomponent sites). The 66 components include three Paleo-Indian components, 28 Archaic components, seven Archaic/Woodland components, and 28 Plains Village components. The Adams Hill Tar Pit, which is of uncertain cultural affiliation, is not included in this sample.

The artifact assemblages collected from the sites during the testing process are, in most cases, the artifacts left behind by previous researchers, so what may be learned from them must remain limited. However, several observations can be made about these assemblages. Perhaps the most interesting aspect of these tested sites is the high proportion of tertiary lithic debris recovered or observed (Table 4). Tertiary lithic debris comprises 79.4 percent of the entire assemblage recovered from nine prehistoric components. For most of these components the tertiary lithic debris comprises from 68 to 100 percent of the debris assemblage recorded (see Table 4). Such a preponderance of tertiary debris suggests that these sites served primarily as short-term hunting camps where tools were resharpened or new tools were made from blanks or preforms that the hunter was carrying. Only sites 34Cm-58, 34Cm-235, and 34Cm-315 yielded any appreciable amount of primary and secondary lithic debris. Site 34Cm-315 was most likely a lithic procurement source for Ogallalla quartzite, for the previously collected artifacts consist mainly of primary and secondary decortication flakes and of cores of Ogallalla quartzite, and hammerstones (Ferring 1978:385-389). No subsurface artifacts were found at 34Cm-315 during the current investigations.

The generally low percentage of formal tools recovered from these sites, both during this and previous investigations (Table 5) also likely reflects the use of these site locations for short-term hunting or foraging camps. Only limited amounts of ground stone—indicative of more sedentary groups—has been recovered from these sites; during the current investigations, only one site, 34Cm-235, yielded any ground stone at all, and the only hammerstone was collected from site 34Cm-315. Otherwise, broken or discarded projectile points, an occasional end scraper, and a few biface fragments comprise the limited tool assemblage recovered thus far from these sites.

Table 4
Proportion of Lithic Debris Assemblage by Decortification Classification
from Major Prehistoric Components, 1995 Excavations

Site Number	Primary		Secondary		Tertiary		Total
	n	%	n	%	n	%	
34Cm-42			4	(23.5)	13	(76.5)	17
34Cm-58	7	(10.3)	9	(13.2)	52	(76.5)	68
34Cm-235	2	(12.5)	3	(18.8)	11	(68.7)	16
34Cm-239			1	(3.1)	31	(36.9)	32
34Cm-315	1	(100)					1
34Cm-407			4	(31.8)	9	(69.2)	13
34Cm-425			1	(17.0)	5	(83.0)	6
34Cm-428					10	(100)	10
34Cm-476			2	(66.7)	1	(33.3)	3
<i>Total</i>	<i>10</i>	<i>(6.1)</i>	<i>24</i>	<i>(14.5)</i>	<i>131</i>	<i>(79.4)</i>	<i>165</i>

Table 5
Prehistoric Artifacts Recovered from Selected Sites at Fort Sill¹

Site Number	Lithic debris	Utilized flakes	Ground/Pecked/Battered Stone	Formal Tools	FCR	Faunal	Total
34Cm-42	56	1	2		1	34	94
34Cm-58	294	9		26		1	330
34Cm-235	175	7	1	16			199
34Cm-239 ²	208	2		9	3	3	225
34Cm-315	199	1		14	2		216
34Cm-407	60	1	1	13		8	83
34Cm-425	4			2			6
34Cm-428 ³	10						10
34Cm-476	21						21

¹ = The counts represent a compilation of data presented in Shaffer (1959), Ferring (1978), Peter and Weston (1993), Weston et al. (1995), and the current document.

² = A total of 1,200 artifacts are reported collected from site 34Cm-239 by Ferring (1978:178). However, Ferring apparently analyzed only 174 artifacts; this is the figure used here.

³ = Site 34Cm-428 is primarily a historic occupation.

The extremely low subsurface artifact densities (Table 6) noted at these sites during the current investigations are also indicative of short-term use of these locations. Excavated artifact densities indicate that these locations were used for very short periods and that recurrent use of any one location was extremely limited. Only site 34Cm-58 yielded a density figure (107 m^3) indicative of intensive or recurrent use of a location. Fire-cracked rock, indicative of hearth or boiling stone activities, was noted only at site 34Cm-235. No features were noted. The lack of features, the limited tool assemblage, and the tertiary nature of the lithic debris suggest that these eight site locations never served as long-term base camps. It is possible that the Fort Sill area may have served only as hunting and foraging grounds for peoples living either along the Washita River to the north and east or along the Red River to the south.

Table 6
Subsurface Artifact Densities at the Nine Prehistoric Components

Site Number	Subsurface Artifacts (n)	Volume Excavated (m^3)	Artifact Density (n/m^3)
34Cm-42	17	1.3	13.00
34Cm-58	750	.7	107.00
34Cm-235	18	1.6	11.25
34Cm-239	33	1.0	33.00
34Cm-315	0	1.4	0.00
34Cm-407	6	1.1	5.45
34Cm-425	1	.6	1.67
34Cm-428	10	1.0	10.00
34Cm-476	3	.8	3.75

HISTORIC SITE SUMMARY

Nine of the 15 sites tested at Fort Sill (34Cm-107, 34Cm-239, 34Cm-315, 34Cm-401, 34Cm-405, 34Cm-414, 34Cm-418, 34Cm-428, and 34Cm-488) contain a historic component. Six (67 percent) have been identified as late nineteenth/early twentieth-century rural dwellings or farmsteads; two sites (22 percent) include historic artifact scatters; and one site (11 percent of the total) is apparently the remains of a livestock slaughtering area or food processing refuse dump (see Table 3).

Historic Farmsteads and Rural Residences

Six historic farmsteads or rural residences were examined through test excavation (34Cm-401, 34Cm-405, 34Cm-414, 34Cm-418, 34Cm-428, and 34Cm-488). While some of the farmsteads were apparently occupied by Euro-American settlers, three of the sites currently under investigation—34Cm-405, 34Cm-414, and 34Cm-428—are associated with Comanche allotments and apparently represent early Comanche homesteads. Site 34Cm-401 may have been part of the late nineteenth/early twentieth century residence of George Wratten. As with the prehistoric sites, artifact densities recovered at these sites (Table 7) are remarkable when compared to other late nineteenth/early twentieth-century farmsteads. Artifact densities range from 10 to 148 per cubic meter. These densities are extremely low when compared to late nineteenth/early twentieth-century farmsteads excavated in the Cross Timbers (Jurney et al. 1988) region of north central

Table 7
Excavated Artifact Densities from the Homestead Sites

Site Number	Excavated Artifacts (n)	Volume Excavated (m ³)	Artifact Density (n/m ³)
34Cm-401	22	2.1	10
34Cm-405	163	1.1	148
34Cm-414	163	1.4	116
34Cm-418	38	.9	42
34Cm-428	48	1.0	48
34Cm-488	129	1.0	129

Texas. The extremely low artifact density value for site 34Cm-401 is not representative of homesteads, for no direct evidence for the presence of the George Wratten homestead was found at site 34Cm-401. The low value for site 34Cm-418 likely reflects the short-term use of the site in the early twentieth century. The remaining four sites (34Cm-405, 414, 428, 488) exhibit density values ranging from 48 to 148 per cubic meter.

Without more detailed information concerning the actual length of occupation of each of these sites, it is difficult to note any patterns of refuse disposal in relation to ethnic origin. Three of the sites (34Cm-405, 414, 428) represent Comanche allotments while the fourth (34Cm-488) is the farmstead of a Euro-American. As noted in the previous discussion of site 34Cm-428 in Chapter 6, the extremely low artifact densities may reflect either the short term of occupation (< 20 years) or the use of the structure for storage. Although the government provided assistance in constructing housing, these buildings were often used for storage rather than as residences, for there was noted to have been "... some good houses where farming implements were stored and a favorite horse installed" (USCO 1894:539). Sarah Pohocsucat (1967:4) agreed:

... many times the Comanches wouldn't live in their houses when the government build them houses, that was the way of my father he wouldn't live in a house we always lived in a great big tipi [*sic*]. And later years [*sic*] when we went into the house, he wouldn't sleep on the bed and he wouldn't eat on the talbe [*sic*].

It is possible, therefore, that the structure at site 34Cm-428 may have been used only briefly as a residence.

The overall low densities of sheet refuse at these sites in comparison to late nineteenth/early twentieth-century sites elsewhere are likely the result of two factors. First, the length of occupation of the Fort Sill sites is of shorter term than those to the south and east. None of the Fort Sill sites considered here were likely occupied more than 40 years. Secondly, homesteaders within the Fort Sill region were more removed from major retail and market centers. A self-sufficient lifestyle likely persisted longer in the Fort Sill region; consequently, the shift to mass consumption of packaged foodstuffs and other retail goods occurred later than elsewhere.

Historic Artifact Scatters

Two multicomponent sites, 34Cm-239 and 34Cm-315, included significant historic artifact scatters. The historic-era remains at 34Cm-239 are mostly confined to the southern end of the site and include metal, glass, and ceramic artifacts, which are most likely the result of one or more trash-dumping episodes. Site 34Cm-315 produced artifacts from two distinct areas on the southwestern margin of the site. The material is eroding from the subsurface, and it appears that the artifacts—ceramics, metal, glass, and the like—were originally placed in small arroyos and covered over, a common practice in rural areas even today. The historic material at both sites dates from the late nineteenth/early twentieth century.

Animal Slaughtering/Food Processing Refuse Dumping Area

Site 34Cm-107 includes not only a few historic artifacts, dating from a late nineteenth/early twentieth-century occupation, but also a significant amount of skeletal remains of domestic animals. Bones from pig, cow or bison, and from an equine (a horse, donkey, or mule) were collected from this site. One bone, a pig's back rib, bears saw marks, and many others exhibit the greenbone spiral fracturing common to deliberate food processing. In addition to these finds, one prehistoric flake, which appears to be intrusive, was also collected. While this site has provided insight into what the early historic occupants of the area were eating, the small assemblage and poor context preclude it from being seriously considered for inclusion in the NRHP.

EVALUATION OF SITE SIGNIFICANCE AND RECOMMENDATIONS FOR TREATMENT

An assessment of the NRHP eligibility of each examined archeological site was presented with the description of the site in Chapter 6. The following section is intended to present a more detailed discussion of the NRHP criteria and a summary of the assessment of each identified archeological site in relation to its potential for fulfilling these criteria. In addition, recommendations for the future treatment of each resource are also presented (Table 8).

The primary purpose of the test excavations documented in this report was to allow a conclusive evaluation of each tested property in relation to the criteria set forth in 36 CFR 60.4 (a-d), as outlined in Chapter 4. Although preliminary assessments were made during initial survey, full assessments of those sites with uncertain NRHP eligibility could not be completed during those initial Phase I investigations. It was possible at that time to weed out the obviously ineligible sites, but those of unknown eligibility required additional test excavations and archival research to obtain data necessary for the determination of National Register eligibility.

Site Assessment Methodology

The criteria in 36 CFR 60.4 (a-d) provide guidelines for site assessment. Of particular importance is the requirement that an archeological resource considered eligible for inclusion in the NRHP be capable of yielding information important to our understanding of prehistory or history. In order to identify the types of information that may be considered important for this purpose, Hofman et al. (1989:157-174) list a series of research needs and concerns for the Southern Great Plains region in general. Those that are relevant to the sites in the Fort Sill area include:

Table 8
Summary of Fifteen Archeological Sites Tested During the 1995 Fort Sill Data Recovery Program

State Site Number and Name	USGS Quad & UTM Coordinates	Type of Site	Temporal Periods Represented	Contextual Integrity	Recommended NRHP Status	Recommendations
34Cm-42 Archery Range II Site	Fort Sill, OK Zone 14 N 3838310 E 553330	Prehistoric lithic scatter	Unknown Prehistoric	Fair; moderate disturbance	Ineligible (inventory site)	No further work
34Cm-58 Blue Beaver Site	Mount Scott, OK Zone 14 N 3836700 E 541550	Prehistoric lithic scatter; with a historic component	Archaic, Plains Village(?)	Fair; moderate disturbance	Ineligible (inventory site)	No further work
34Cm-107 Beef Pens Site	Arbuckle Hill, OK Zone 14 N 3837000 E 557360	Historic slaughtering site; with an isolated prehistoric find	Late nineteenth/early twentieth century	Fair; moderate disturbance	Ineligible (inventory site)	No further work
34Cm-235 High Terrace Site	Fort Sill, OK Zone 14 N 3839500 E 551960	Prehistoric lithic scatter; with a historic component	Unknown Prehistoric	Poor; extensive disturbance	Ineligible (inventory site)	No further work
34Cm-239 Rocky Twins Site	Fort Sill, OK Zone 14 N 3840040 E 550180	Historic artifact scatter; and prehistoric lithic scatter	Possible Late Archaic; Late nineteenth/early twentieth century	Poor; extensive disturbance	Ineligible (inventory site)	No further work
34Cm-315 Geological Blowout Site	Mount Scott, OK Zone 14 N 3833000 E 539740	Prehistoric lithic procurement; and historic trash dump	Unknown Prehistoric; Late nineteenth/early twentieth century	Poor; extensive disturbance	Ineligible (inventory site)	No further work
34Cm-401 George Written Site	Fort Sill, OK Zone 14 N 3835080 E 557155	Late nineteenth/early twentieth-century historic homestead	Early twentieth century	Poor; extensive disturbance	Ineligible (inventory site)	No further work
34Cm-405 Werye Homestead Site	Mount Scott, OK Zone 14 N 3833740 E 536880	Early twentieth-century Comanche homestead	Twentieth century	Poor; extensive disturbance	Ineligible	No further work

Table 8 (cont'd)

State Site Number and Name	USGS Quad & UTM Coordinates	Type of Site	Temporal Periods Represented	Contextual Integrity	Recommended NRHP Status	Recommendations
34Cm-407 Rabbit Hill II Site	Fort Sill, OK Zone 14 N 3841130 E 550210	Prehistoric lithic scatter	Plains Village; Plains Woodland	Poor; extensive disturbances	Ineligible (inventory site)	No further work
34Cm-414 Nahwaconic Homestead Site	Fort Sill, OK Zone 14 N 3842340 E 549100	Early twentieth century Comanche homestead	Twentieth century	Fair; moderate disturbance	Eligible	Preservation
34Cm-418 Lonely Well Site	Mount Scott, OK Zone 14 N 3834330 E 539640	Late nineteenth/early twentieth-century historic homestead	Late nineteenth/early twentieth century	Poor; extensive disturbance	Ineligible (inventory site)	No further work
34Cm-425 Rabbit Hill III Site	Fort Sill, OK Zone 14 N 3841290 E 540000	Prehistoric lithic scatter	Unknown Prehistoric; Late Prehistoric	Poor; extensive disturbance	Ineligible (inventory site)	No further work
34Cm-428 Chiwoonny Homestead Site	Fort Sill, OK Zone 14 N 3840160 E 557140	Early twentieth century Comanche homestead; with prehistoric component	Twentieth century	Fair; moderate disturbance	Ineligible (inventory site)	No further work
34Cm-476 Lawton Aqueduct Site	Fort Sill, OK Zone 14 N 3835000 E 551100	Prehistoric lithic scatter	Unknown Prehistoric	Poor; extensive disturbance	Ineligible (inventory site)	No further work
34Cm-488 Daly Hill Site	Fort Sill, OK Zone 14 N 3834640 E 546260	Late nineteenth-early twentieth century historic homestead	Twentieth century	Fair; moderate disturbance	Ineligible (Inventory site)	Preservation of the storm shelter.

1. study of any sites relating to the Paleo-Indian period;
2. paleoecological studies relating to the transition from the Pleistocene to Holocene periods;
3. studies of almost any sites dating to the middle Holocene period from approximately 8,000 to 2,000 years ago;
4. documentation of the dynamic nature of the Holocene environment;
5. studies of the social organization of Holocene hunting and gathering peoples, the structure and flexibility of the bands, group sizes and seasonal variation, and mobility patterns;
6. studies of geomorphic factors, landform changes, and deeply buried archeological sites;
7. refinement of local cultural chronologies for the Late Prehistoric period, in order to better assess the relationships between the various complexes of this period;
8. better definition of the material assemblages of the Late Prehistoric period;
9. studies of the economic aspects of the Late Prehistoric period, including seasonal variability, economic territories, and change within this period;
10. studies of the interface of distinctive ceramic and chipped stone technologies during the Late Prehistoric period;
11. studies of all sites of the poorly known Protohistoric period;
12. documentation of the daily life, subsistence economy, and interactions of the frontiersman/explorer;
13. examination of documented historic period sites to enable recognition of Native American, African-American slave, and Anglo-American occupations;
14. documentation of settlement patterns and subsistence systems of Ranching/Farming complex; and
15. reconstruction of early lifeways and socio-economic systems to complement, broaden, and perhaps supplant the historic record.

Thus, the first criterion of significance for any archeological site in the project area is its capability to yield information relevant to one of these research topics. In addition, the following criteria can also be applied to facilitate the evaluation of archeological resources:

1. potential for interpretation of culture history or local sequences;
2. potential for interpretation of intersite or intrasite patterning;
3. potential for interpretation of technology or primitive industries; and/or
4. existence as a unique example of a site type.

Whether or not specific sites exhibit potential for contributing to our knowledge of prehistory or contain data relevant to any particular research theme is dependent upon a precondition of contextual integrity of the archeological deposits. For example, a prehistoric site located close to Post Oak Creek and buried by alluvial deposits has a far greater potential for containing undisturbed deposits than one located on a stable, nonaggrading surface. However, the nature of contextual integrity, as it affects research potential of a site, must also be viewed as being relative. That is to say, a property dating to the Paleo-Indian period need not demonstrate the same level of contextual integrity as one dating to the Late Prehistoric in order to have the same, or greater, research potential and NRHP significance. The fundamental information derived from the test excavation at each site was used in conjunction with previously collected data in order to evaluate the tested sites and their potential for increasing our knowledge of past lifeways or contributing to the resolution of regionally pertinent research questions.

Recommendations

Prehistoric Sites

Although many of the prehistoric sites contain components essential to addressing the research questions outlined above, it is also required that such components should be isolable so that social organization, structure and flexibility of the bands, and mobility patterns may be detected. It is also essential that such components be datable so that changes within a period, such as the Late Prehistoric period, may be documented. Ideally, the research goals require site components that are isolable and include features containing floral and faunal remains essential to the reconstruction of the subsistence economy. Unfortunately, the geological contexts of the prehistoric components do not provide contexts favorable for the preservation of isolable components. None of the prehistoric components were situated on landforms that continued to aggrade following a specific occupational episode; in fact, all are on landforms that have gradually degraded over the past century. Farming practices initially impacted several site contexts and military training activities contributed to the continued erosion and disturbance of many. Only sites 34Cm-42, 34Cm-58, and 34Cm-235 exhibit any potential for the contextual integrity necessary for addressing pertinent research questions. Even within these sites, however, no features were detected that would permit absolute dating of the occupation or reconstruction of the subsistence economy. Furthermore, there is no evidence at either these sites or the remaining sites that components related to a specific time period could be isolated. It is apparent that most of these sites were used possibly more than once during the Archaic and Late Prehistoric periods. It could be argued that such sites represent the use of a particular location within the Fort Sill region, and as such, should be preserved as a functional segment of a larger settlement/subsistence system. Although the horizontal spatial patterning at sites 34Cm-42, 34Cm-58, and 34Cm-235 may be preserved, there is no means of determining what part of that spatial patterning belongs to a particular use of that location or to a particular time period. Without isolable components that may be dated, the research potential of these sites is extremely limited; therefore, it is recommended that none of the prehistoric sites be considered eligible for inclusion in the NRHP.

Historic Sites

Evaluation of the historic period archeological sites requires a broader examination, for each site may qualify as National Register-eligible under Criteria A, B, or D. Those sites that reflect Comanche allotments (34Cm-405, 414, 428) may be significant because they are representative of federal/tribal relations at the time or are associated with the lives of persons significant in our past. They may also provide data that enable the recognition of Native American and Anglo-American occupations and the reconstruction of settlement/ subsistence systems associated with the early twentieth-century Ranching/Farming complex. It was initially thought that site 34Cm-107 might have been associated with the issue of beef to the Apache prisoners of war at Fort Sill in the late nineteenth and early twentieth centuries. Review of the available historical documentation and the test excavations, however, revealed that such an association is unlikely. Given the limited research potential of the site, site 34Cm-107 is recommended as ineligible for inclusion in the NRHP. Similarly, site 34Cm-401 was thought to be associated with the homesite of George Wratten, interpreter to the Apache. However, test excavations revealed no conclusive evidence that the location was the site of his homestead; it is more likely that a nearby site is the location. Perhaps, site 34Cm-401 merely represents an outbuilding area of his homestead. Nevertheless, the lack of any contextual integrity of this site area resulted in the recommendation that site 34Cm-401 is ineligible for inclusion in the NRHP. Two other sites (34Cm-418 and 34Cm-488) that represent Native American and Euro-American occupation, respectively, of the region in the early twentieth century have been extensively impacted by subsequent activities. Since the research potential of sites 34Cm-418 and 34Cm-488 is extremely limited and they are

Chapter 7: Summary of Results and Recommendations

not associated with events or persons significant in our past, it is recommended that they be considered ineligible for inclusion in the NRHP. Site 34Cm-488, however, does include a well-preserved storm shelter feature that should be fenced and protected.

The three remaining sites (34Cm-405, 34Cm-414, 34Cm-428) represent Comanche allotment sites that were likely occupied by Comanche owners in the early twentieth century until the lands were acquired by the Fort Sill Military Reservation. These sites potentially contain a material cultural assemblage that reflects the Comanche existence and adaptation of the Anglo-American culture of the time period. These three sites, therefore, have the potential to address research questions related to the recognition of Native American occupations and the reconstruction of socio-economic systems. Of these three sites, however, only 34Cm-414 exhibits the contextual integrity and data base necessary to address the research questions outlined above. It is therefore recommended that the Nahwauconic Homestead (34Cm-414) be considered eligible for inclusion in the NRHP. This site should be marked as "Off Limits" to all military activities and be protected from vandalism.

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APPENDIX A

CORE HOLE PROFILE DESCRIPTIONS FOR THE PROPOSED TRUCK WASH FACILITY STUDY AREA, EAST CACHE CREEK FLOODPLAIN, COMANCHE COUNTY, OKLAHOMA

Depth (cm)	Soil Horizon	Description
CORE HOLE 1: Immediately south of the overgrown road marking the north side of this triangular project area, approximately midway between Berry Road on the east side of the project area and the San Francisco and St. Louis Railroad on the west side of the project area.		
0-98	A1k	Very dark gray (10YR 3/1) silty clay loam; pronounced granular (i.e., crumbly) structure; occasional limestone pebbles (≤ 1 cm in size); common rootlets and open krotovina; silt content increases with depth; occasional pinpoint calcium carbonate concretions; lower contact gradual.
98-228	A2	Dark brown (10YR 3/3) silt loam; massive to weak granular structure; occasional rootlets; becomes increasingly clayey with depth; lower contact gradual.
228-287	C	Very dark gray (10YR 3/1) clay; massive; no obvious inclusions; lower contact abrupt.
287-510	2C1ck	Dusky red (2.5YR 3/3) clay; massive to weak granular structure; minimal sand and silt content; occasional krotovina filled with above very dark gray clay; lightens to dark red (2.5YR 4/6) below 330 cm bs; occasional pinpoint calcium carbonate concretions and matchhead-sized manganese oxide concretions; becomes moist below 390 cm, and moisture increases with depth, as does sand content; occasional gravel (≤ 1 cm in diameter) observed in lower 20 cm of stratum; lower contact gradual.
510-513	2C2ck	Dark red (2.5YR 4/6), poorly sorted gravel, sand, and clay mix; sand is very coarse and quartz; gravel is a mix of limestone, chert, and rhyolite up to 2 cm in size. This unit is saturated with water and flowed up into the auger bore, making it impossible to retrieve samples from deeper than 513 cm. Excavation ceased at this point.

CORE HOLE 2: Approximately 50 m southwest of Core Hole 1, at a bearing of 240°.

0-35	A1	Dark yellowish brown (10YR 4/4) silt loam; pronounced granular structure; common rootlets and small open krotovinas; lower contact gradual.
35-65	A2	Dark brown (10YR 3/3) silt loam; granular structure; common rootlets and small open krotovinas; lower contact gradual.
65-170	A3	Brown (10YR 4/3) silt loam; granular structure; common rootlets; sand content increases slightly below 115 cm, but decreases again below 130 cm; lower contact gradual.
170-205	A4	Very dark grayish brown (10YR 3/2) clay loam; granular structure; occasional rootlets; few open krotovina; lower contact gradual.
205-325	BCc-Cc	Brown (10YR 4/3) clay; granular structure to 300 cm, becoming hard and massive below; occasional rootlets and manganese oxide concretions; few krotovinas filled with very dark grayish brown clay loam from above; lower contact abrupt.
325-573	2C	Brown (7.5YR 4/4) slightly silty clay; massive; moist; common small, angular limestone fragments observed below 450 cm; lower boundary abrupt.
573-621	3C	Yellowish brown (10YR 5/8) very gravelly, very moist, clayey sand; loose; sand is quartz and very coarse; gravel consists of limestone and chert pebbles 4 cm and smaller; lower contact abrupt.
621-650	4Cg	Brown (7.5YR 4/3) gravelly clay; massive and highly compacted; gravel consists of chert and limestone pebbles 1-2 mm in size; mottled with gray (10YR 6/2) gleying; lower contact gradual.
650-910	4Crg	Dark brown (7.5YR 3/2) gravelly clay; massive and extremely compact, probably consisting of weathered bedrock or lithifying soil; gravel is identical to above; gleyed with gray (10YR 6/2) mottles. Goes to base of core hole.

Depth (cm)	Soil Horizon	Description
CORE HOLE 3: Approximately 50 m southwest of Core Hole 2, at a bearing of 240°; just west of north-south gravel road.		
0-182	Ac	Dark brown (7.5YR 3/2) clay loam; granular structure; clay increases toward base; common rootlets and small open krotovinas; occasional manganese oxide concentrations and very dark gray (10YR 3/1) "lenses" noted below 120 cm; one fragment of coal noted at a depth of 170 cm; very occasional small (≤ 1 cm) limestone and chert pebbles; lower contact gradual. The anomalous bit of coal and the black clay inclusions suggest past disturbance.
182-370	Bk	Dark brown (7.5YR 3/2) silty clay; weak granular to massive structure; below 280 cm, coarse sand present in small amounts, and the stratum becomes very hard and compact; threaded with small krotovinas filled with calcium carbonate filaments; few small (≤ 1 cm) limestone pebbles; lower contact gradual.
370-434	C1	Yellowish red (5YR 4/4) clay; massive; very compact; occasional small (≤ 1 cm) limestone pebbles; common krotovinas filled with light brownish gray (10YR 6/2) silt loam and dark brown (7.5YR 3/2) silty clay; lower contact gradual.
434-620	C2	Dark reddish gray (5YR 4/2) clay; massive; compact; some yellowish red (5YR 4/4) mottling in upper 75 cm; few krotovinas; very moist and plastic throughout; occasional small limestone pebbles (≤ 1 cm); lower contact gradual.
620-801	C3c	Mottled dark yellowish brown (10YR 4/4) and brownish yellow (10YR 6/8) clay; massive; very moist and plastic; few krotovina filled with dark brown (7.5YR 3/2) silt loam; occasional iron oxide pebbles and concretions; occasional small (≤ 1 cm) limestone and chert pebbles, with very small (1-3 mm) gravel common in lower 15 cm; lower contact unclear, but apparently gradual.
801-866	C4	Mottled dark yellowish brown (10YR 4/4) and brownish yellow (10YR 6/8) clayey gravel; gravel consists of chert and limestone pebbles, pinhead-sized to 4 cm in size; very wet; lower contact abrupt.
866-924	2Crg	Dark brown (7.5YR 3/3) gravelly clay; massive; very compact; gravel consists of pea-sized chert and limestone pebbles; some gray to light gray (N6-N7) gleying visible in the lower 20 cm; stratum goes to base of core hole.

CORE HOLE 4: Approximately 50 m southwest of Core Hole 3, at a bearing of 240°; in a disturbed area covered with head-high grass.

0-35	A1	Very dark brown (10YR 2/2) clay loam; moderately compact; granular structure; common rootlets and open krotovinas; occasional pea-sized limestone and chert gravel (≤ 1 cm); lower contact gradual.
35-130	A2	Dark yellowish brown (10YR 4/4) silty, medium to coarse quartz sand; highly compacted in the upper 10 cm, but otherwise loose; no obvious rootlets and krotovinas; lower contact unclear, but apparently gradual.
130-308	AC	Very dark grayish brown (10YR 3/2) sandy silt loam; moist, increasingly so with depth; massive; the sand is quartz, and mostly coarse, with a very minimal fine sand fraction; common pinhead to pea-sized chert gravel; becomes increasingly clayey toward base; lower contact gradual.
308-350	C1	Brown (10YR 4/3) silty clay; massive; moist; highly compacted; lower boundary uncertain, but apparently gradual.
350-520	C2	Dark brown (7.5YR 3/2-7.5YR 3/3) clay; massive; highly compacted; very occasional limestone and chert pebbles, pea-sized and smaller; lower contact gradual.
520-623	C3g	Grayish brown (10YR 5/2) to dark grayish brown (10YR 4/2) clay with occasional strong brown (7.5YR 5/8) mottles; massive; very moist, plastic, and sticky; occasional limestone and chert pebbles, pea-sized and smaller; lower contact gradual.
623-737	C4g	Dark yellowish brown (10YR 4/4) gravelly clay; moderately compacted; occasional strong brown (7.5YR 5/8) mottles, possibly due to the presence of iron oxide; very moist; gravel is pea-sized and smaller pebbles of chert and limestone; lower contact gradual.

Depth (cm)	Soil Horizon	Description
737-752	2C1k	Yellowish red (5YR 4/6) clay; massive; very moist and plastic; occasional calcium carbonate streaks and matchhead-sized concentrations and small limestone pebbles (≤ 1 cm); lower contact gradual.
752-783	2C2	Yellowish brown (10YR 5/6) clay; minimal sand content; massive to weak granular structure; very moist and plastic; occasional pea-sized and smaller limestone pebbles; very occasional yellowish red (5YR 4/6) mottling; lower contact abrupt.
783-822	3C1	Dark grayish brown (10YR 4/2) sandy clay; massive to weak granular structure; occasional pea-sized and smaller limestone and chert pebbles; lower contact gradual.
822-852	3C2g	Dark yellowish brown (10YR 4/4) sandy clay; weak granular structure; common yellowish red (5YR 4/6) mottling; common pea-sized and smaller limestone and chert pebbles; lower contact abrupt.
852-892	4Cr	Interbedded microstratigraphic layers of dark brown (10YR 3/3) and dark gray (10YR 4/1) clay and silty clay, with each layer less than .5 mm thick; highly compacted; no inclusions; moist in all but the lower 5 cm, whereupon it becomes very dry; stratum goes to base of core hole. Probably weathered bedrock.

CORE HOLE 5: Approximately 50 m southwest of Core Hole 4, at a bearing of 240°; 40 m northeast of the San Francisco-St. Louis Railroad embankment, possibly within a borrowed area.

0-38	A1	Dark brown (10YR 3/3) clay loam; granular to weak blocky structure; loosely compacted; common rootlets and small open krotovinas; occasional small limestone pebbles smaller than 1 cm; lower contact gradual.
38-71	A2	Black (7.5YR 2.5/1) clay loam; weak granular structure; moderately compacted; common rootlets and open krotovinas; lower contact gradual.
71-101	2A	Dark brown (10YR 3/3) silt loam; pronounced granular to weak blocky structure; moderately compacted; common rootlets and fine open krotovinas; lower contact abrupt. Apparent buried A-horizon; collected entire core sample from this depth. Radiocarbon age: 1120 ± 60 BP.
101-303	3C	Yellowish red (5YR 4/6) clay; massive to weak granular structure; highly compacted and firm; occasional limestone pebbles and cobbles to 8 cm, the frequency of which increases with depth; layers of pure clay alternate with layers of clay containing common limestone pebbles (pea-sized and less) and coarse quartz sand (208-238 cm, 250-273 cm, and 288-303 cm); lower contact abrupt.
303-416	4C	Strong brown (7.5YR 4/6) gravelly, clayey coarse sand; gravel is chert and limestone, pinhead-sized to 4 cm; sand is quartz; very moist throughout; lower contact abrupt.
416-521	5Cg	Brown (7.5YR 4/3) clay; massive; very compact and firm; occasional rhyolite and chert gravel to 4 cm; common dusky red (2.5YR 3/3) mottles; lower boundary uncertain.
521-886	6ABg(?)	Dark gray (10YR 4/1) loam; extreme gleying observed; clay increases with depth, until stratum becomes a clay loam; pronounced granular to blocky structure; common brown (7.5YR 3/3) mottling, which increases with depth; some microstratigraphy observed below 650 cm; goes to base of core hole. Apparent buried A-horizon; collected sample from 567-598 cm. Yielded radiocarbon age of $30,930 \pm 420$ BP.

CORE HOLE 6: Approximately 50 m southeast of Core Hole 5, at a bearing of 145°.

0-31	A1	Very dark gray (10YR 3/1) clay loam; granular structure; loosely compacted; common rootlets and small open krotovina; lower contact gradual.
31-57	A2	Brown (10YR 4/3) silty, fine sandy loam; weak granular to blocky structure; moderately compacted; common rootlets and small open krotovina; lower boundary unclear.
57-175	C	Very dark brown (10YR 2/2) silty clay; massive; moderately compacted; moist and plastic; occasional rootlets; lower contact abrupt.

Depth (cm)	Soil Horizon	Description
175-183	2C	Thin lens of brown (7.5YR 4/4) sandy loam; sand is coarse and quartz; no apparent inclusions; lower contact abrupt.
183-255	3C1	Dark reddish brown (5YR 3/2) dense clay; massive; very firm; no rootlets or krotovinas observed; occasional chert and limestone pebbles increasing in frequency and size (to 4 cm) with depth; lower contact gradual.
255-330	3C2	Yellowish red (5YR 4/6) clayey gravel; minimal sand content; moist and moderately compacted; gravel is usual mix of limestone, chert, and rhyolite to 4 cm; lower contact gradual.
330-350	3C3	Yellowish red (5YR 4/6) clayey, gravelly coarse sand; sand is quartz; gravels pea-sized and smaller and consisting of limestone, chert, and rhyolite; stratum saturated with water; lower boundary uncertain.
> 350	4C	Dark yellowish brown (10YR 4/6) liquid sandy clay; completely saturated; unable to capture in coring bore. Depth remains unknown. Ended core at this point due to inability to capture additional material.

CORE HOLE 7: Approximately 50 m northeast of Core Hole 6, at a bearing of 60°.

0-30	A1	Very dark grayish brown (10YR 3/2) loam; granular to weak blocky structure; moderately compact; roots, rootlets, and small open krotovinas common; lower contact gradual.
30-71	A2	Brown (10YR 4/3) fine sandy loam; moderately compacted; weak granular structure; common rootlets and small open krotovinas; lower boundary clear.
71-185	Bk	Very dark brown (10YR 2/2) silty clay; some coarse quartz sand present; massive; moderately compacted; moist and plastic; occasional rootlets; common small krotovinas filled with calcium carbonate filaments; lower contact gradual.
185-283	C1	Dark brown (7.5YR 3/2) silty clay; minimal sand content; moist and plastic; massive to very weak granular structure; few rootlets; lower contact unclear but apparently gradual. Collected sample from 185-245 cm which contains apparent charcoal. Radiocarbon age: 2100 ± 60 BP.
283-427	C2g	Very dark grayish brown (10YR 3/2) clay; minimal sand content; massive; few rootlets; becomes streaked and mottled with strong brown (7.5YR 5/8) and brown (10YR 4/3) below 354 cm; mottling increases with depth; lower contact gradual.
427-550	C3g	Brown to dark grayish brown (10YR 4/3-4/2) clay; firm; massive; minimal strong brown (7.5YR 5/8) mottling; no rootlets; very few pinhead-sized chert gravels; darkens slightly in lower 30 cm; lower contact unclear.
550-600	2Ag	Mottled dark gray (10YR 4/1) and very dark grayish brown (10YR 3/2) clay; highly gleyed; weak granular structure; moist and plastic; common rootlets and organic material; lower contact abrupt. Collected sample from 550-580 cm. Radiocarbon age: 7360 ± 170 BP.
600-635	3C	Very dark grayish brown (10YR 3/2) clay; massive; very firm; no observed inclusions; lower contact abrupt.
635-655	4C1	Dark gray (10YR 4/1) clay; massive; very firm; no apparent inclusions; lower contact gradual.
655-697	4C2	Very dark grayish brown (10YR 3/2) clay; massive; very firm; no observed inclusions; lower contact gradual.
697-777	4C3cg	Brown (10YR 4/3) to grayish brown (10YR 5/2) clay; massive; very firm; occasional yellowish brown (10YR 5/8) mottles and manganese oxide concretions; lower contact abrupt.
777-788	5C1	Strong brown (7.5YR 5/8) gravelly clay; massive; firm; gravel consists of limestone pebbles to 2 cm in size; lower contact abrupt.

Depth (cm)	Soil Horizon	Description
788-878	5C2	Yellowish brown (10YR 5/8) gravelly, sandy clay; sand is quartz and coarse; gravel is the usual mix of limestone, chert, and rhyolite, pea-sized and smaller; lower contact abrupt.
878-930	6Crkg	Dark gray (10YR 4/1) clay; massive; very firm to extremely hard; highly gleyed; occasional calcium carbonate concretions and concentrations, especially in the lower 25 cm; goes to base of trench.

CORE HOLE 8: Approximately 50 m northeast of Core Hole 7, at a bearing of 60°.

0-21	A1	Dark grayish brown (10YR 4/2) loam; pronounced granular structure; moderately compacted; common rootlets and small open krotovinas; occasional pea-sized limestone pebbles; lower contact gradual.
21-65	A2	Very dark gray (10YR 3/1) loam; weak granular structure; moderately compacted; few rootlets; occasional small limestone pebbles (to 2 cm); lower contact gradual.
65-180	A3	Dark yellowish brown (10YR 3/4) silt loam; weak granular structure; loosely compacted; few rootlets; lower contact abrupt.
180-320	C1	Very dark brown (10YR 2/2) silty clay; massive; well compacted; few rootlets; lower contact gradual.
320-541	C2ck	Firm, highly compacted clay, grading slowly and smoothly from very dark brown (10YR 2/2) through strong brown (7.5YR 4/6) to yellowish red (5YR 4/6) at the base; massive; few rootlets; plastic when moist; occasional pea-sized chert and limestone gravel; occasional lamellae or krotovinas observed trailing downward, filled with 10YR 2/2 clay or silty clay; occasional matchhead-sized iron oxide and manganese oxide concentrations noted; few calcium carbonate concentrations; lower contact abrupt.
541-785	2C	Yellowish red (5YR 4/6) silty coarse sand; occasional limestone and chert cobbles smaller than 2 cm; material saturated with water and flowed up into core bore as quicksand, making it impossible to continue the coring past 785 cm. Coring ceased at this point.

CORE HOLE 9: Approximately 50 m northeast of Core Hole 8, at a bearing of 60°.

0-33	A	Very dark gray (7.5YR 3/1) clay loam; granular structure; moderately compacted; common rootlets and small open krotovinas; lower contact gradual.
33-162	AC	Dark brown (7.5YR 3/2) silty clay; granular structure; moderately compacted; common rootlets and small open krotovinas; lower contact abrupt.
162-180	C1	Brown (10YR 4/3) sandy loam; massive; loosely compacted; no inclusions; lower contact abrupt.
180-322	C2ck	Dark brown (7.5YR 3/2-3/3) sandy clay; massive; few rootlets; occasional krotovinas filled with the above stratum's material; occasional manganese oxide specks; very few calcium carbonate specks; lower contact gradual.
322-544	C3ck	Firm, highly compacted clay, grading slowly and smoothly from very dark brown (10YR 2/2) through strong brown (7.5YR 4/6) to yellowish red (5YR 4/6) at the base; massive; few rootlets; plastic when moist; occasional pea-sized chert and limestone gravel; occasional lamellae or krotovinas observed trailing downward, filled with 10YR 2/2 clay or silty clay; occasional matchhead-sized iron oxide and manganese oxide concentrations noted; few calcium carbonate concentrations; lower contact abrupt.
544-608	2C	Yellowish red (5YR 4/6) sandy, gravelly clay; gravel is pea-sized and less, and consists of chert and limestone pebbles; sand is quartz; material very moist, but a sample was recovered due to clay content; below 608 cm, however, the material was saturated with water and flowed up into core bore as quicksand, making it impossible to continue the coring past that point. Coring ceased.

Depth (cm)	Soil Horizon	Description
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CORE HOLE 10: Approximately 50 m northeast of Core Hole 9, at a bearing of 60°.

0-33	A	Black (10YR 2/1) loam; pronounced granular structure; common rootlets and small open krotovinas; lower contact gradual.
33-198	B	Very dark brown (10YR 2/2) clay loam; clay increases with depth; granular structure; common rootlets and small open krotovinas; lower contact gradual.
198-565	Cck	Firm, highly compacted clay, grading slowly and smoothly from very dark brown (10YR 2/2) through strong brown (7.5YR 4/6) to yellowish red (5YR 4/6) at the base; massive; few rootlets; plastic when moist; occasional pea-sized chert and limestone gravel; occasional lamellae or krotovinas observed trailing downward, filled with 10YR 2/2 clay or silty clay; occasional matchhead-sized iron oxide and manganese oxide concentrations noted; few calcium carbonate concentrations; lower contact abrupt.
565-750	2C	Strong brown (7.5YR 4/6) gravelly, clayey coarse sand; sand is quartz; gravel is a mix of chert and limestone, most pea-sized and smaller, with occasional cobbles to 4 cm—larger gravel increases in frequency with depth; stratum is saturated with water and becomes increasingly sandy with depth. After 750 cm it became impossible to capture additional samples, so the coring ceased at this point.

CORE HOLE 11: Approximately 50 m northeast of Core Hole 10, at a bearing of 60°.

0-40	A1	Very dark brown (10YR 2/2) loam; pronounced granular structure; moderately compacted; common rootlets and small open krotovinas; lower contact gradual.
40-202	A2	Dark brown to dark yellowish brown (10YR3/3-3/4) silty, sandy loam; silt increases with depth; weak granular structure; loosely compacted; common rootlets and small open krotovinas; lower contact gradual.
202-243	C	Dark brown (7.5YR 3/3) extremely sandy clay loam; massive; sand is coarse, quartz; no apparent inclusions; lower contact abrupt.
243-567	2C1ck	Firm, highly compacted clay, grading slowly and smoothly from very dark brown (10YR 2/2) through strong brown (7.5YR 4/6) to yellowish red (5YR 4/6) at the base; minimal sand and silt content; massive; few rootlets; plastic when moist; occasional pea-sized chert and limestone gravel; occasional lamellae or krotovinas observed trailing downward, filled with 10YR 2/2 clay or silty clay; occasional match head-sized iron oxide and manganese oxide concentrations noted; few calcium carbonate concentrations; sand content increases toward base of stratum; lower contact gradual.
567-737	2C2	Yellowish red (5YR 4/6) very gravelly, sandy clay mix; sand is coarse, quartz; gravel is the usual mix of chert, limestone, and rhyolite to 4 cm; becomes increasing wet and sandy with depth; saturated past approximately 600 cm; lower contact abrupt.
737-747	3Cg/3Crg	Dark brown (7.5YR 3/2) clay; minimal sand content; very firm; massive; highly gleyed, with common greenish gray (5BG 6/1) streaks and mottles; occasional strong brown (7.5YR 5/8) mottles; able to capture only a minimal sample, as overlying stratum filled the bore, making it impossible to collect anything from below. Coring ended at this point.

CORE HOLE 12: Approximately 50 m northeast of Core Hole 11, at a bearing of 60°.

0-15	A1	Brown (10YR 4/2) loam; pronounced granular structure; rootlets and small open krotovinas common; lower contact gradual.
15-60	A21	Dark brown (7.5YR 3/2) loam; weak granular structure; common rootlets and small open krotovinas; occasional small chert and limestone pebbles ≤ 2 cm in size; lower contact gradual.
60-92	A22	Brown (10YR 4/3) loamy, coarse quartz sand lens; few rootlets; very few pea-sized limestone pebbles; lower contact abrupt.

Depth (cm)	Soil Horizon	Description
92-153	A23	Dark brown (7.5YR 3/2) loam; weak granular structure; common rootlets and small open krotovinas; occasional small chert and limestone pebbles \leq 2 cm in size; lower contact gradual.
153-224	A3-AC	Very dark grayish brown (10YR 3/2) silty clay loam; massive to weak granular structure; occasional rootlets; thin (2 cm) layer of brown (10YR 4/3) silt loam at 184-186 cm; lower contact abrupt.
224-510	C1ck	Firm, highly compacted clay, grading slowly and smoothly from very dark brown (10YR 2/2) through strong brown (7.5YR 4/6) to yellowish red (5YR 4/6) at the base; minimal sand and silt content; massive; few rootlets; plastic when moist; occasional pea-sized chert and limestone gravel; occasional lamellae or krotovinas observed trailing downward, filled with 10YR 2/2 clay or silty clay; occasional match head-sized iron oxide and manganese oxide concentrations noted; few calcium carbonate concentrations; sand content increases dramatically toward base of stratum; lower contact gradual.
510-538	C2	Yellowish red (5YR 4/6) clayey, sandy gravel mix; gravels and other matrix very poorly sorted; sand is coarse, quartz; gravel is the usual mix of chert, limestone, and rhyolite to 5 cm; becomes increasing wet and sandy with depth; saturated past approximately 515 cm; became impossible to capture samples below 538 cm. Ceased coring at this point.

CORE HOLE 13: Approximately 50 m southeast of Core Hole 10, at a bearing of 150°.

0-30	A1	Very dark brown (10YR 2/2) loam; pronounced granular structure; loosely compacted; common rootlets and small open krotovinas; lower contact gradual.
30-54	A21	Dark brown (10YR 3/3) loam; sand fraction coarse; weak granular structure; loosely compacted; occasional rootlets and open krotovinas; lower contact gradual.
54-69	A22	Dark yellowish brown (10YR 3/4) coarse sand lens; massive to weak granular structure; loose; occasional rootlets; lower contact abrupt.
69-111	A23	Dark brown (10YR 3/3) clayey silt; sand fraction coarse; weak granular to massive structure; loosely compacted; occasional rootlets and open krotovinas; lower contact gradual.
111-191	A3-AC	Dark brown (10YR 3/2-3/3) silty clay loam; massive to weak granular structure; moderately compacted; few rootlets; lower contact gradual.
191-544	C1ck	Firm, highly compacted clay, grading slowly and smoothly from very dark brown (10YR 2/2) through strong brown (7.5YR 4/6) to yellowish red (5YR 4/6) at the base; minimal sand and silt content; upper 28 cm very silty in this location; massive; few rootlets; plastic when moist; occasional pea-sized chert and limestone gravel; occasional lamellae or krotovinas observed trailing downward, filled with 10YR 2/2 clay or silty clay; occasional match head-sized iron oxide and manganese oxide concentrations noted; few calcium carbonate concentrations; lower contact gradual.
544-550	C2	Yellowish red (5YR 4/6) clayey, sandy, gravelly mix; gravels and other matrix very poorly sorted; sand is coarse, quartz; gravel is the usual mix of chert, limestone, and rhyolite to 5 cm; becomes increasing wet and sandy with depth; completely saturated; became impossible to capture samples below 550 cm. Ceased coring at this point.

CORE HOLE 14: Approximately 50 m southwest of Core Hole 13, at a bearing of 240°.

0-31	A	Very dark brown (10YR 2/2) loam; pronounced granular structure; loosely compacted; common rootlets and small open krotovinas; lower contact gradual.
31-88	AB1	Dark yellowish brown (10YR 3/4) silty clay; massive to weak granular; moderately compacted; clay content decreased with depth, until the stratum become a clayey silt at base; few rootlets; lower contact gradual.
88-182	AB2	Dark brown (10YR 3/3) silty clay loam; weak granular to massive structure; few rootlets; lower contact unclear.

Depth (cm)	Soil Horizon	Description
182-456	C1ck	Firm, highly compacted clay, grading slowly and smoothly from very dark brown (10YR 2/2) through strong brown (7.5YR 4/6) to yellowish red (5YR 4/6) at the base; minimal sand and silt content; massive; few rootlets; plastic when moist; occasional pea-sized chert and limestone gravel; occasional lamellae or krotovinas observed trailing downward, filled with 10YR 2/2 clay or silty clay; occasional match head-sized iron oxide and manganese oxide concentrations noted; few calcium carbonate concentrations; lower contact gradual.
456-600	C2	Dark yellowish brown (10YR 4/6) coarse sand; minimal clay content decreasing to zero below 470 cm; very occasional small limestone and chert gravels (≤ 1 cm in size); completely saturated; became impossible to capture samples below 475 cm. Cease coring at 600 cm due to inability to acquire subsequent samples.

CORE HOLE 15: Approximately 50 m southwest of Core Hole 14, at a bearing of 240°.

0-31	A1	Black (10YR 2/1) silty clay loam; weak granular structure; highly compacted; common rootlets and small open krotovinas; lower contact gradual.
31-48	A2	Very dark brown (10YR 2/2) silt loam; weak granular to massive structure; moderately compacted; common rootlets and small open krotovinas; lower contact gradual.
48-112	A3	Dark yellowish brown (10YR 4/4) slightly clayey silt; clay increases with depth; weak granular to massive structure; moderately compacted; rootlets common; lower contact unclear, apparently gradual.
112-243	AC	Dark brown (10YR3/3) slightly clayey silt; clay increases with depth, until the unit is a silty clay at base; massive to weak granular structure; moderately compacted; occasional rootlets; lower contact abrupt.
243-256	2C1	Very dark grayish brown (10YR 3/2) silty clay; massive; moderately compacted; no obvious inclusions; lower contact gradual.
256-535	2C2ck	Firm, highly compacted clay, grading slowly and smoothly from very dark brown (10YR 2/2) through strong brown (7.5YR 4/6) to yellowish red (5YR 4/6) at the base; minimal sand and silt content; massive; few rootlets; plastic when moist; occasional pea-sized chert and limestone gravel; lower 15 cm extremely gravelly; occasional lamellae or krotovinas observed trailing downward, filled with 10YR 2/2 clay or silty clay; occasional match head-sized iron oxide and manganese oxide concentrations noted; few calcium carbonate concentrations; lower 30 cm very moist; lower contact gradual.
535-554	2C3	Yellowish red (5YR 4/6) gravelly sand and clay mix; gravels and other matrix very poorly sorted; sand is coarse, quartz; gravel consists of pea-sized pebbles of chert, limestone, and rhyolite; becomes increasing wet and sandy with depth, though the mix is more clayey here than in most other locations; completely saturated; lower contact uncertain.
554-608	2C4ck	Yellowish red (5YR 4/6) gravelly clay; massive; very compact; gravels are a mix of chert, limestone, and rhyolite to 3 cm; less moist than overlying stratum; few manganese oxide and calcium carbonate specks observed; unable to go deeper than 608 cm, as auger bore began to fill with liquefied material from overlying stratum.

CORE HOLE 16: Approximately 60 m southwest of Core Hole 15, at a bearing of 240° (staggered to avoid a north-south gravel road).

0-44	A1	Dark brown (7.5YR 3/2) loam; pronounced granular structure; moderately compacted; common rootlets and small open krotovinas; lower contact gradual.
44-114	A2	Dark yellowish brown (10YR 3/4) fine loamy sand; massive; loosely compacted; common rootlets; lower contact gradual.
114-181	A3	Dark yellowish brown (10YR 3/4) silt loam; massive; loosely compacted; few rootlets; lower contact gradual.
181-252	Bk	Dark brown (7.5YR 3/2) very silty clay; massive to weak granular structure; occasional rootlets and krotovinas; some krotovinas filled with calcium carbonate filaments; lower contact gradual.

Depth (cm)	Soil Horizon	Description
252-447	Cck	Very dark gray (10YR 3/1) clay; massive; extremely firm; very few rootlets; occasional small (≤ 1 cm) limestone pebbles, as well as calcium carbonate and manganese oxide specks and concentrations; lower contact abrupt.
447-499	2Ck	Dusky red (2.5YR 3/4) clay; massive; occasional rootlets; very compacted; very occasional pinhead-sized chert and limestone gravels and calcium carbonate specks; moistens with depth; lower contact abrupt.
499-560	3C	Dark brown (10YR 3/3) silty clay; weak granular structure; highly compacted; very occasional pea-sized limestone pebbles; lower contact abrupt.
560-587	4Ck	Dusky red (2.5YR 3/4) clay; massive; occasional rootlets; highly compacted; very occasional pinhead-sized chert and limestone gravels and calcium carbonate specks; moistens with depth; lower contact abrupt.
587-624	5C	Dark brown clay (10YR 3/3); massive; firm; common limestone pebbles less than 1 cm in size; lowest 15 cm very moist; lower contact abrupt.
624-655	6C	Strong brown (10YR 4/6), poorly sorted mix of gravel, clay, and sand; very clayey in upper 12 cm, but clay content falls off markedly thereafter; gravel consists of chert, limestone and rhyolite pebbles which increase in size with depth (to 5 cm), as does the sand content; became entirely saturated with water below 655 cm, preventing additional material from being recovered. Ended coring at this point.

CORE HOLE 17: Approximately 50 m southwest of Core Hole 16, at a bearing of 240°.

0-23	A1	Very dark brown (10YR 2/2) loam; pronounced granular structure; quite compacted; common rootlets and small open krotovinas; lower contact gradual.
23-118	A2	Dark brown to dark yellowish brown (10YR 3/3-3/4) silt loam; weak granular structure; moderately compacted; common rootlets and small open krotovinas; lower contact gradual.
118-190	Bck	Very dark brown (10YR 2/2) very silty clay; weak granular structure; loosely compacted; occasional rootlets and pinhead-sized chert and limestone pebbles; few calcium carbonate concretions; lower contact abrupt.
190-238	2C1k	Dark brown (7.5YR 3/3) silty clay; weak granular structure; occasional rootlets and small krotovinas filled with calcium carbonate filaments; occasional pinhead-sized chert and limestone pebbles; lower contact gradual.
238-285	2C2c	Dark yellowish brown (10YR 4/4) clay; minor silt and sand content; weak granular to massive structure; occasional small (≤ 1 cm) limestone and chert pebbles and rootlets; common manganese oxide concentrations; lower contact abrupt.
285-312	3C	Dark brown (7.5YR 3/3) clay; massive; firm; occasional pea-sized limestone and chert pebbles; lower contact abrupt.
312-468	4C1ck	Dark yellowish brown (10YR 4/4) clay; massive; common manganese oxide concentrations; common krotovinas filled with light brownish gray (10YR 6/2) silt or calcium carbonate filaments; occasional pea-sized and smaller chert and limestone pebbles; lower contact unclear.
468-547	4C2	Brown (10YR 4/3) clay; minimal sand content; massive; very firm; common pea-sized limestone and chert pebbles; lower contact abrupt.
547-629	5Cc _g	Brown (10YR 5/3) clay; minor silt and sand content; extremely firm; silt content increases with depth; occasional brownish yellow (10YR 6/8) mottles; few manganese oxide stains; becomes moist below 550 cm; lower contact abrupt.
629-635	6C	Dark yellowish brown (10YR 4/6) clayey coarse sand; wet; lower contact abrupt.
635-712	7C1c _g	Yellowish red (5YR 4/6) clay; massive; very firm; minimal sand content in upper 15 cm, falling to near zero thereafter; common light gray (10YR 6/1) reduction specks throughout; occasional yellowish brown

Depth (cm)	Soil Horizon	Description
		to brownish yellow (10YR 5/8-6/8) mottles; occasional manganese oxide concentrations and stains; lower contact gradual.
712-784	7C2kg	Dark yellowish brown (10YR 3/4) slightly silty clay; massive to weak granular structure; firm; occasional calcium carbonate filaments in old krotovinas; occasional yellowish brown (10YR 5/6) mottles; lower contact gradual.
784-846	7C3cg	Dark grayish brown (10YR 4/2) clay; extensively gleyed with bluish gray (5B 5/1); gleying increases with depth; occasional small, weathered chert and iron oxide pebbles; lower contact abrupt.
846-904	8Cr	Extremely gleyed dark greenish gray (5GY 4/1) to very dark gray (10YR 3/1) sandy clay; massive; extremely firm, nearly lithified; common limestone pebbles and angular fragments to 2.5 cm; collected sample from 846-880 cm; goes to base of core hole. Radiocarbon age: > 30830 BP.

CORE HOLE 18: Approximately 65 m southeast of Core Hole 17, at a bearing of 150°.

0-15	A1	Very dark brown (10YR 2/2) clay loam; pronounced granular structure; moderately compacted; common rootlets and small open krotovinas; lower contact gradual.
15-48	A2	Dark brown (10YR 3/3) loam; weak granular structure; moderately compacted; common rootlets and small open krotovinas; lower contact gradual.
48-187	A3	Dark yellowish brown (10YR 3/4) fine sandy loam; massive to weak granular structure; loosely compacted; common rootlets; lower contact gradual.
187-455	C1ck	Firm, highly compacted clay, grading slowly and smoothly from very dark brown (10YR 2/2) through strong brown (7.5YR 4/6) to yellowish red (5YR 4/6) at the base; minimal sand and silt content; massive; few rootlets; plastic when moist; occasional pea-sized chert and limestone gravel; occasional lamellae or krotovinas observed trailing downward, filled with 10YR 2/2 clay or silty clay; some krotovinas filled with light brownish gray (10YR 6/2) silt of uncertain origin; common calcium carbonate specks and filaments in krotovinas; occasional match head-sized iron oxide and manganese oxide concentrations noted; very moist below 230 cm; lower contact gradual.
455-468	C2	Yellowish red (5YR 4/6) very gravelly coarse sand; sand is quartz; gravel is a mix of chert and limestone, most pea-sized and smaller; stratum is very moist, but not saturated; lower contact abrupt.
468-506	2Cg	Weak red (2.5YR 5/4) sandy clay; massive; mottled with light gray (10YR 6/1) and yellowish brown (10YR 5/8); mottled with yellowish red (5YR 4/6) from 494-498 cm; occasional limestone or chert pebble up to 3 cm in size; lower contact abrupt.
506-724	3Cg	Dark greenish gray (5BG 4/1) extremely gleyed sandy clay; mottled with very dark brown (7.5YR 2.5/2); loosely compacted; no apparent inclusions except for a few fragments of cemented sand or sandstone to 3 cm in the lower 10 cm of the stratum—this material is gray (10YR 4/1); lower contact uncertain, as it was not recovered.
724-884	?	Saturated, liquefied clayey sands; color uncertain. Unable to acquire a sample due to liquid nature of material; limited information collected from cuttings only. Occasional chert pebbles to 5 cm observed wedge on auger screw. No additional information available.

CORE HOLE 19: Approximately 40 m northeast of Core Hole 18, at a bearing of 30°.

0-26	A1	Very dark brown (10YR 2/2) loam; pronounced granular structure; quite compacted; common rootlets and small open krotovinas; occasional small (≤ 1 cm) limestone pebbles; lower contact gradual.
26-52	A2	Dark brown (10YR 3/3) loam; weak granular structure; moderately compacted; common rootlets and small open krotovinas; few small (≤ 1 cm) limestone pebbles; lower contact gradual.

Depth (cm)	Soil Horizon	Description
52-162	A3	Brown (10YR 4/3) silt loam; clay increases moderately with depth; weak granular structure; moderately compacted; common rootlets and small open krotovina; lower boundary abrupt.
162-373	2C1k	Very dark gray (10YR 3/1) to dark brown (10YR 3/3) silty clay; silt decreases with depth; massive; moderately compacted; occasional rootlets; occasional calcium carbonate specks and filaments in old krotovinas; lower contact gradual.
373-425	2C2k	Very dark brown (10YR 2/2) clay; massive; quite compacted; few rootlets; occasional small (≤ 1 cm) limestone pebbles; occasional calcium carbonate specks and filaments in old krotovinas; lower contact gradual.
425-470	2C3k	Dark brown (7.5YR 3/4) clay; massive; few small (≤ 1 cm) limestone pebbles; occasional calcium carbonate specks and filaments in old krotovinas; lower contact abrupt.
470-540	3Cck	Brown (10YR 4/3) silty clay; massive; very firm; common calcium carbonate filaments; occasional match head-sized manganese oxide concentrations; lower boundary abrupt.
540-615	4C1ck	Very dark grayish brown (10YR 3/2) clay; massive; very firm; common calcium carbonate filaments; few match head-sized manganese oxide concentrations; lower contact gradual.
615-645	4C2kg	Dark grayish brown (10YR 4/2) clay; massive; occasional yellowish brown (10YR 5/6) mottles; common calcium carbonate filaments and specks; lower contact gradual.
645-705	4C3ckg	Grayish brown (10YR 5/2) to light brownish gray (10YR 6/2) clay with occasional yellowish brown (10YR 5/8) mottles; massive; moist and plastic; common calcium carbonate filaments and specks; occasional match head-sized manganese oxide concentrations; lower contact gradual.
705-712	4C4c	Brown (10YR 4/3), poorly sorted mix of gravel, clay, and sand; very moist; gravel consists of chert, limestone, iron ore, and rhyolite pebbles to 5 cm in size; lower contact abrupt.
712-797	5Crg	Gray (10YR 4/1) to dark bluish gray (5B 4/1) clayey coarse sand; extremely gleyed; massive; includes a few pockets of yellowish red (5YR 4/6) clay; moderately compacted at the top of the stratum, but compaction increases with depth until the material becomes hard sandstone. Impossible for drill to go deeper.

CORE HOLE 20: Approximately 50 m northeast of Core Hole 19, at a bearing of 60°.

0-35	A1	Very dark brown (10YR 2/2) loam; pronounced granular structure; quite compacted; common rootlets and small open krotovinas; lower contact gradual.
35-59	A21	Dark brown (10YR 3/3) loam; weak granular structure; moderately compacted; common rootlets and small open krotovinas; few small (≤ 1 cm) limestone pebbles; lower contact abrupt.
59-77	A22	Brown (10YR 4/3) fine sandy loam; massive; loosely compacted; common rootlets and small open krotovina; lower boundary abrupt.
77-177	A23	Dark brown (10YR 3/3) clayey silt; weak granular to massive structure; moderately compacted; occasional rootlets; lower contact gradual.
177-194	AC	Dark yellowish brown (10YR 3/4) silt loam mottled with very dark brown (10YR 2/2) clay; massive; loosely compacted; lower contact gradual.
194-375	C1	Very dark brown (10YR 2/2) slightly silty clay; silt content decreases to near-zero with depth; massive; moderately to well compacted; few rootlets; lower contact gradual.
375-457	C2	Dark brown (7.5YR 3/4) clay; massive; very firm; sticky; occasional pea-sized chert and limestone pebbles; lower contact gradual.

Depth (cm)	Soil Horizon	Description
457-563	C3	Strong brown (7.5YR 4/6) sandy clay; massive; plastic and sticky; sand increases with depth; occasional small (≤ 2 cm) limestone and chert pebbles; stratum moistens with depth; lower contact gradual.
563-576	C4	Strong brown (7.5YR 4/6) gravelly, clayey coarse sand; sand is quartz; gravel is a mix of chert and limestone, 2 cm and smaller, but increasing in frequency and size with depth; stratum is saturated with water and becomes increasingly sandy with depth. After 576 cm it became impossible to capture additional samples, so the coring ceased at this point.

CORE HOLE 21: Approximately 50 m northeast of Core Hole 20, at a bearing of 60°.

0-41	A1	Black (10YR 2/1) silt loam; pronounced granular structure; highly compacted; common rootlets and small open krotovinas; lower contact gradual.
41-61	A21	Dark brown (10YR 3/3) silt loam; weak granular structure; moderately compacted; common rootlets and fine open krotovinas; lower contact abrupt.
61-69	A22	Yellowish brown (10YR 5/4) sandy loam; massive; moderately compacted; common rootlets and fine open krotovinas; lower contact abrupt. Apparently a lens within the overlying and underlying 10YR 3/3 silt loam.
69-119	A23	Dark brown (10YR 3/3) silt loam; weak granular structure; moderately compacted; common rootlets and fine open krotovinas; lower contact abrupt.
119-516	2C1ck	Firm, highly compacted clay, grading slowly and smoothly from very dark brown (10YR 2/2) through strong brown (7.5YR 4/6) to yellowish red (5YR 4/6) at the base; minimal sand and silt content; massive; very firm; plastic when moist; few rootlets; occasional pea-sized chert and limestone gravel; becomes very sandy below 457 cm, and sand increases with depth; occasional match head-sized iron oxide and manganese oxide concentrations noted; few calcium carbonate concentrations; lower 30 cm very moist; lower contact gradual.
516-530	2C2	Yellowish red (5YR 4/6) to dark brown (7.5YR 3/4) clayey, gravelly sand; gravels and other matrix very poorly sorted; sand is coarse, quartz, and increases in frequency with depth; gravel consists of pea-sized pebbles of chert, limestone, and rhyolite, which increase in size and frequency with depth; completely saturated with water; became impossible to capture samples below 530 cm. Ceased coring at this point.

CORE HOLE 22: Approximately 95 m southwest of Core Hole 19, at a bearing of 240°; approximately 30 m east of the San Francisco-St. Louis Railroad embankment.

0-100	A	Very dark brown (10YR 2/2) to dark brown (10YR 3/3) silty clay loam; granular to weak blocky structure; moderately compacted; common rootlets and small open krotovinas; large limestone rock (> 20 cm) observed in upper 10 cm; lower contact gradual.
100-169	C1c	Dark brown (7.5YR 3/3) clay; massive; very firm and compacted; occasional match head-sized manganese oxide nodules; lower contact gradual.
169-338	C2ckg	Brown (7.5YR 4/3) clay; massive; very firm; common yellowish brown (10YR 5/8) mottles; common pea-sized to pinhead-sized limestone pebbles; abundant match head-sized manganese oxide nodules and calcium carbonate specks and filaments; lower contact gradual.
338-409	C3g	Mottled light brownish gray (10YR 6/1) and light brown (7.5YR 6/4) sandy clay; massive and extremely firm; sand is fine and quartz; mottling is 50/50 in upper 25 cm, but 7.5YR 6/4 becomes predominant (> 70 percent) thereafter; occasional limestone pebbles, pea-sized and smaller; lower contact gradual.
409-455	C4	Brown (7.5YR 4/4) clayey, gravelly sand; clay content increases with depth; gravel increases in frequency and size (to 4 cm) with depth; stratum is entirely saturated with water; turned to quicksand below 455 cm, making it impossible to retrieve additional samples; core ceased at this point.

Depth (cm)	Soil Horizon	Description
CORE HOLE 23: Approximately 57 m southwest of Core Hole 18, at a bearing of 200°.		
0-17	A1	Dark brown (10YR 3/3) loam; pronounced granular structure; moderately compacted; common rootlets and small open krotovinas; lower contact abrupt.
17-45	A2	Black (10YR 2/1) silty clay; weak granular structure; moderately compacted; common rootlets and small open krotovinas; lower contact gradual.
45-71	A3	Dark yellowish brown (10YR 3/4) fine sandy loam; massive; loosely compacted; lower contact unclear but apparently gradual.
71-157	C	Very dark brown (10YR 2/2) loamy clay; massive; moderately compacted; occasional rootlets; common pea-sized and smaller limestone and chert pebbles; lower contact abrupt.
157-280	2C	Brown (7.5YR 4/4) clayey, very gravelly coarse sand; very moist; gravel consists of chert, limestone, and rhyolite pebbles to 8 cm—size and frequency of the gravels increases with depth; lower contact abrupt.
280-380	3C1	Dark brown (7.5YR 3/4) clayey coarse sand; occasional pea-sized and smaller chert, limestone, and rhyolite gravels; stratum entirely saturated with water; lower contact uncertain.
380-685	3C2g-3Crg	Mottled dark brown (7.5YR 3/4) and olive (5Y 4/3) sandy clay; extremely hard and highly gleyed with greenish gray (5GY 6/1); massive to weak platy structure to 600 cm, but platy structure becomes pronounced thereafter, with the material breaking readily into thin (≤ 5 mm) sheets; occasional pea-sized and smaller limestone and chert pebbles; gleying and 5Y 4/3 mottling is very common in the upper portion of the stratum, but decreases with depth; gleying predominates in lower 60 cm of stratum, and solid concretions of this material appear below this point; lower contact gradual.
685-760	3Crg-R	Greenish gray (5GY 6/1) extremely hard clayey sand; pronounced platy structure; by the base of the stratum, the material has become consolidated sandstone.
760-780	R	Very dark gray (10YR 3/1) clayey sandstone; pronounced platy structure; extensively gleyed, including some streaks and inclusions of dark bluish gray (5B 4/1); gleying increases with depth; stopped excavating at 780 cm due to the extreme hardness of the material.

CORE HOLE 24: Approximately 52 m northwest of Core Hole 4, at a bearing of 350°.

0-46	A1	Black (10YR 2/1) loam; pronounced granular structure; very compact; common rootlets and small open krotovinas; lower contact gradual.
46-156	A2	Dark yellowish brown (10YR 3/4) fine sandy loam; weak granular structure; moderately compacted; common rootlets and small open krotovinas; lower contact gradual.
156-248	A3	Very dark brown (10YR 2/2) very loamy clay; weak granular structure; loosely compacted; common rootlets and small open krotovinas; lower contact unclear, but may be abrupt.
248-308	2Ak	Black (10YR 2/1) clay; granular structure; firm; plastic when moist; occasional rootlets and calcium carbonate specks; lower contact gradual. Sample collected from 248-286 cm. Radiocarbon age: 2160 \pm 60 BP.
308-338	2Bk	Dark brown (7.5YR 3/3) silty clay; weak granular structure; occasional rootlets and calcium carbonate specks; lower contact gradual.
338-540	2BCck	Dark brown (7.5YR 3/4) to strong brown (7.5YR 4/6) clay; massive to weak granular structure; common manganese oxide concentrations; occasional calcium carbonate specks and small (≤ 2 cm) limestone pebbles; few pockets of dark yellowish brown (10YR 4/6) silt; lower boundary unclear but apparently gradual.
540-635	2C	Brown (7.5YR 4/4) gravelly, sandy clay; wet but not saturated; gravels consist of limestone and chert cobbles to 5 cm; sand coarse and quartz; lower contact uncertain.

Depth (cm)	Soil Horizon	Description
635-750	3C	Dark brown (10YR 3/3) clay; massive; firm; occasional large granite, chert, and limestone rocks (to 7 cm); could not recover soil from below 750 cm due to plugging of bore with rocks. Coring ceased at this point.

CORE HOLE 25: Approximately 50 m southwest of Core Hole 24, at a bearing of 240°.

0-24	A1	Black (10YR 2/1) loamy clay; pronounced granular structure; very compact; common rootlets and small open krotovinas; lower contact gradual.
24-66	A2	Dark brown (10YR 3/3) loamy clay; weak granular to massive structure; moderately compacted; common rootlets and small open krotovinas; lower contact gradual.
66-271	C1k	Dark brown (7.5YR 3/4) clay; massive; very firm; minimal quartz sand and gravel content; gravel is pea-sized and smaller chert and limestone pebbles; occasional manganese oxide and calcium carbonate concentrations; occasional very dark gray (10YR 3/1) streaks which may be lamellae or filled krotovinas; lower 20 cm is increasingly moist; lower contact gradual.
271-420	C2	Dark brown (7.5YR 3/4) sandy, gravelly clay; massive; loosely compacted; stratum is wet, and water content increases with depth until the stratum is saturated; sand is quartz and coarse, and also increases with depth; gravel consists of limestone, chert, and rhyolite pebbles, and increases in frequency and size with depth (to 6 cm); stratum entirely saturated with water, and eventually turned to quicksand which clogged the bore; lower contact uncertain.
420-455	2Cg	Reddish brown (5YR 4/4) sandy, gravelly clay; highly gleyed with dark greenish gray (5G 4/1); very firm; dry; gravel consists of limestone, chert, and rhyolite pebbles to 3 cm; impossible to go below 455 cm, because the core barrel became clogged with flowing overlying material.

APPENDIX B

**DEFINITIONS OF PREHISTORIC ARTIFACT CLASSES,
CODING FORM USED FOR PREHISTORIC ARTIFACT
ANALYSIS, AND
SUMMARY TABLE FOR PREHISTORIC ARTIFACTS**

by
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FINISHED BIFACIAL TOOLS

Finished bifacial tools are those finely worked pieces in which the manufacturing process has been apparently brought to completion, as evidenced by secondary retouch, edge straightening, hafting preparation, notching, and similar characteristics. Ten categories are recognized: (1) Dart point; (2) Arrow point; (3) Indeterminate point; (4) Axe; (5) Thinned biface (knife); (6) Chopper; (7) Drill; (8) Adze/Gouge; (9) Marginal Biface Retouch; and (10) Indeterminate Biface. These tools are further divided into a number of subcategories: (1) Complete; (2) Tip; (3) Mid-section; (4) Base/stem; (5) Longitudinal fracture; (6) Tang; and (7) Blade.

Dart Points, Arrow Points, and Indeterminate Points

Dart points, arrow points, and indeterminate points are all varieties of projectile points, bifacial tools formed by fine secondary retouch with basal modification in the form of notching, stemming, or thinning of the proximal end for purposes of hafting. Dart points are those employed to tip hand-held darts or spears; arrow points are used to tip arrows; and indeterminate points are, as the name implies, of uncertain usage. All projectile points are assigned to recognized types whenever possible.

Axe

Axes are bifacially worked, generally rectangular to subrectangular tools which exhibit modification along all edges. The modification has produced relatively straight to convex ends. Indications of hafting are present.

Thinned Biface

Thinned bifaces are sufficiently whole, bifacially worked blanks which exhibit biconvex symmetry, the presence of at least one edge formed by fine secondary retouch, and an absence of cortex except for the proximal end. These artifacts are commonly recognized as knives in the literature.

Chopper

Choppers are cobbles which have been modified, usually bifacially, into a teardrop shape by the removal of several flakes from one end. The opposite cortical, rounded end is unmodified, providing a handgrip during utilization.

Drill

A long, tapered, bifacially flaked bit resulting in a diamond-shaped cross-section is the distinguishing characteristic for this tool. During the Archaic period, the distal ends of projectile points were often reworked to produce this form. Drills from later periods often were fashioned from flakes.

Adze/Gouge

These chisel-like woodworking tools, which may be either bifacial or unifacial, are triangular in shape and are worked along the wider end to produce a steep, beveled straight bit. The opposite end, at the point of the triangle, was the hafted end; the tool itself was generally hafted perpendicular to the handle. In cross section, these tools appear to be plano-convex to pyramidal.

Marginal Bifacial Retouch

These specimens, usually modified flakes, are those that exhibit limited modification on both faces along a portion of an edge or edges.

Indeterminate Biface

An indeterminate biface is a finished bifacial tool whose original function remains uncertain.

UNFINISHED BIFACES

Unfinished bifaces are those in which the manufacturing process has not been brought to completion. These artifacts tend to be somewhat crude, lacking the fine workmanship of finished tools. Five categories are recognized: (1) Aborted, Early; (2) Aborted, Late; (3) arrow point preform; (4) dart point preform; and (5) unidentified fragment. Incomplete bifaces are further subdivided into the categories of complete and fragment.

Aborted, Early

Aborted bifaces are bifacially worked artifacts that appear to have been rejected prior to the completion of the bifacial reduction process. The Early Aborted biface specimens usually lack symmetry and exhibit sinuous edges formed by the removal of large, thick flakes. Cortex is usually present on at least one surface and areas of step or hinge fracturing may be evident.

Aborted, Late

These specimens usually exhibit biconvex symmetry and straight edges. Generally, all cortex will have been removed, but the fine, pressure retouch characteristic of a thinned biface is not present.

Arrow Point and Dart Point Preforms

These specimens are bifacially worked blanks with indications of fine edge retouch from pressure flaking along both lateral edges. The proximal ends of the blanks lack the necessary modification that would facilitate hafting. Some specimens retain portions of the original striking platform. The specimens are subjectively placed into the dart or arrow point subclasses based on overall dimensions.

Unidentified Fragment

These specimens are bifacially worked pieces that cannot be placed in a more specific class because of their fragmentary nature.

UNIFACES

Unifaces are those tools that exhibit flake scars on one face only. Eleven basic types have been identified: (1) Marginal Modified/retouched uniface; (2) Borer; (3) Burin; (4) Denticulate; (5) End scraper; (6) Side scraper; (7) Scraper with Graver Spur; (8) Graver; (9) Notch; (10) Burin spall; and (11) Adze/gouge. These categories are further distinguished by whether the specimen is complete or fragmentary.

Marginal Modified/Retouched Unifaces

These are minimally altered pieces, usually flakes, that are characterized by a single row of relatively small flake scars (less than 2 mm in width) forming a working edge with an acute angle (less than 50°). One or more edges may have been modified.

Borer

Borers are small, drill-like unifacial tools that are characterized by alternating edge retouch. These pieces are further distinguished by two adjacent concavities formed along an edge through the removal of small flakes, resulting in a sharp, prominent protrusion that was used for perforating.

Burin

A burin is a tool on which a wedge-shaped, chisel-like edge has been produced by the removal of a long, narrow sliver or spall, often perpendicular to the axis of the specimen.

Denticulate

This type of tool is formed by the removal of small flakes along one lateral edge of a piece in order to form a working edge that is multiply notched or serrated.

End Scraper

These are pieces with retouch restricted to either the distal or proximal end of the blank, generally producing a convex working edge. Marginal retouch may appear along the lateral edges of the blank. The opposing end of the piece may bear some minimal retouch, that was performed in order to facilitate hafting the piece.

Side Scraper

These are pieces with retouch present on one or both lateral edges of the blank. The working edge may be straight to convex or concave.

Scraper with Graver Spur

These specimens are scrapers with an additional carefully flaked, prominent, sharp protrusion formed by the creation of adjacent shallow concavities.

Graver

Gravers are similar to borers, except that the protrusion is retouched from one side only, for the purposes of scoring and engraving.

Notch

This type of tool is formed when small flakes are removed along one lateral edge of a piece in order to form a working edge along a single, relatively deep concave area.

Burin Spall

A burin spall is the small piece that is removed to produce a chisel-like edge, thus forming a burin. Burin spalls often retain minimal retouch along one edge, and in some cases may have been used for graving purposes.

Adze/Gouge

These pieces are identical to bifacial gouges, except that they have been modified unifacially.

UNMODIFIED DEBRIS

Unmodified debris is the unused debris resulting from lithic reduction practices; it usually takes the form of flakes, that must exhibit a platform and a bulb of percussion, and nondiagnostic shatter. Debris may be further distinguished by the amount of cortex remaining on the piece. A total of six categories is recognized: (1) Primary Decortication Flake, 75 percent cortex; (2) Secondary Decortication Flake, less than 75 percent cortex; (3) Tertiary Flake, no cortex; (4) Bifacial thinning flake; (5) Angular shatter; and (6) Not applicable. These categories are subdivided into type classes: (1) Size 1 (1 inch or 25 mm sieve); (2) Size 2 ($\frac{3}{4}$ inch or 19 mm sieve); (3) Size 3 ($\frac{1}{2}$ inch or 12.5 mm sieve); (4) Size 4 ($\frac{3}{8}$ inch or 9.5 mm sieve); (5) Size 5 ($\frac{1}{4}$ inch or 6.3 mm sieve); (6) Size 6 (less than $\frac{1}{4}$ inch or 6.3 mm sieve); and (7) Not applicable.

Primary Decortication Flake, 75 percent cortex

These are flakes that retain a minimum of 75 percent cortex on their dorsal surfaces.

Secondary Decortication Flake, less than 75 percent cortex

These flakes retain less than 75 percent cortex on their dorsal surfaces.

Tertiary Flakes, no cortex

Tertiary (interior) flakes lack cortex, having derived entirely from the interior of a core.

Bifacial Thinning Flakes

Bifacial thinning flakes are those distinctive flakes that are produced by softhammer reduction or pressure flaking. They are often small, and are usually characterized by diffuse bulbs of percussion and lipped striking platforms.

Angular Shatter

The term "angular shatter" refers to those irregular fragments that do not express the characteristics of a typical flake. Many are flake fragments, while others are simply lithic chunks that were unintentionally produced during the lithic reduction process, as for example when a flake removal failed catastrophically or the striking platform was crushed by an ill-placed blow.

Not Applicable

This term refers to those bits of lithic debris that do not fit into a recognizable category.

UTILIZED FLAKES

Utilized flakes are those that exhibit discontinuous retouch or very abrupt retouch of a thin edge, which likely reflects use wear, rather than intentional modification. Utilized flakes often functioned as expediency tools. Seven varieties are recognized: (1) Primary decortication flake, 75 percent cortex; (2) Secondary decortication flake, less than 75 percent cortex; (3) Tertiary flake, no cortex; (4) Bifacial thinning flake; (5) Angular shatter; (6) Platform-bearing remnant; and

(7) Not applicable. Because most of these categories are identical to those recognized for unmodified debris, only Type 6, Platform-bearing remnant, will be defined here. As before, all seven categories are subdivided into type classes: (1) Size 1 (1 inch or 25 mm sieve); (2) Size 2 ($\frac{3}{4}$ inch or 19 mm sieve); (3) Size 3 ($\frac{1}{2}$ inch or 12.5 mm sieve); (4) Size 4 ($\frac{3}{8}$ inch or 9.5 mm sieve); (5) Size 5 ($\frac{1}{4}$ inch or 6.3 mm sieve); (6) Size 6 (less than $\frac{1}{4}$ inch or 6.3 mm sieve); and (7) Not applicable.

Platform-bearing Remnant

A Platform-bearing remnant is a utilized flake fragment retaining the platform. All other utilized flake fragments fall into the category of angular shatter.

CORES

A core is a cobble or mass of lithic material exhibiting scars that are the result of the systematic removal of flakes by human activity. Three subclasses of cores are recognized: (1) Tested pebble/nodule; (2) Complete core; and (3) Fragment/indeterminate. Cores are further subdivided into morphological and technological categories: (1) Bipolar; (2) Discoidal; (3) Blade; and (4) Not applicable.

Tested Nodule/Pebble

These pieces are pebbles or cobbles with one or very few flakes removed. These specimens represent discards from an early material selection stage of the bifacial reduction process.

Complete Core

As the name implies, this consists of a core that appears to be complete.

Fragment/Indeterminate

This category includes all core fragments (including core tablets, which are large flakes that have been removed from a core in order to prepare a new platform) as well as those pieces that may be either core fragments or complete cores.

GROUND/PECKED/BATTERED STONE

This artifact class includes those specimens that have been modified by grinding, pecking, or battering. Fifteen categories, divided further into complete and fragmentary pieces, are recognized: (1) Abrader; (2) Anvil; (3) Celt; (4) Hammerstone; (5) Incised Stone; (6) Mano; (7) Mano/hammerstone; (8) Metate/grinding slab; (9) Pendant/gorget; (10) Polished Stone; (11) Smoothed Stone; (12) Sinker (fishing weight); (13) Bead; (14) Multi-purpose; and (15) Atlatl weight/bannerstone.

Abrader

These specimens are usually limestone or sandstone fragments that exhibit longitudinal, V-shaped grooves resulting from use as a polishing, smoothing, and/or sharpening stone employed in the production of bone or lithic tools.

Anvil

Anvils are cobbles with a small circular indentation in the center of one face, which were presumably used as a base in the processing of nuts and/or grains.

Celt

These pieces are axe-like tools, round or oval in cross section, that are produced by extensive pecking and grinding. These tools may be grooved or nongrooved. Like adze/gouges, they have a steeply angled bit on one end.

Hammerstone

A hammerstone is a hard nodule of lithic material, usually quartzite, used for direct fracturing of the tool stone during lithic reduction. These pieces exhibit battering on one or more ends, resulting from utilization during the lithic reduction process.

Incised Stone

Incised stones are plano-convex cobbles, usually of limestone, that exhibit a series of three or more incised parallel lines near the center of the specimen. These pieces often exhibit the characteristics of having been thermally altered and apparently were used in the straightening process of shafts for darts or arrows.

Mano

A mano is an ovate-shaped nodule of quartzite or sandstone with one or more surfaces smoothed through grinding.

Mano/Hammerstone

These multi-use tools exhibit at least one flattened, ground face and one end that has been battered as the result of use as a hammerstone.

Metate/Grinding Slab

These specimens are large, thick slabs, usually of sandstone, that have been ground smooth on one or both surfaces. These surfaces may be flat or basin-shaped.

Pendant/Gorget

These pieces are ground, smoothed and polished stones, often of an exotic, nonlocal material, that exhibit one or two drilled perforations. They were presumably worn or utilized as decorative ornaments.

Polished Stone

Polished stones are small pebbles that have been ground and smoothed through purposeful modification, as opposed to modification through utilization.

Smoothed Stone

These are small pebbles, such as ochre or limestone, that have been modified and shaped entirely through utilization.

Sinker (fishing weight)

These are medium-sized, usually water-worn pebbles with notches worked into opposite ends; they appear to have been used as net sinkers, although they may have been used as bola stones.

Bead

Beads are small cylindrical or round pieces through which a hole has been bored. They were presumably strung with similar pieces and worn for decorative purposes.

Multi-purpose

Multi-purpose tools are those, such as mano/hammerstones, that were modified and/or utilized for a variety of tasks, such as grinding, polishing, abrading, etc.

Atlatl Weight/Bannerstone

The function of these rare artifacts remains a matter of debate, but they appear to be atlatl weights, tools used to obtain greater range and accuracy from atlatl darts. Most of these artifacts are winged, hourglass-shaped (similar in shape to a double-bladed executioner's axe), and drilled through the center in order to facilitate their attachment to an atlatl shaft.

UNWORKED STONE

Unworked stone refers to those materials at a site that, though they have not been formally or directly utilized or modified, have nevertheless been impacted by human activity. Two formal classes are recognized: (1) Cobble (manuport); and (2) Burned rock. An additional category, *not applicable*, is included for those materials that do not fit into these two categories.

Cobble (manuport)

Included in this artifact class are those nodules or cobbles that are not a natural part of the site context and that have not been altered by human activity.

Burned Rock

Burned rock includes those cobbles or rock fragments that exhibit angular fractures, crazing, pot lid fractures, or discoloration as a result of being heated. These rocks may have been used as boiling stones, griddles, or linings for earth ovens. The raw material may be limestone, sandstone, or quartzite. The term "Fire-cracked rock" or the acronym "FCR" is also used for describing burned rock.

Geo-Marine, Inc.
Prehistoric Artifact Coding Format
31 October 1995

Compiled by Marianne Marek

Group: (LIT) Lithics

Class: (1) Finished Bifacial Tools

Type: (1) Dart point
(2) Arrow point
(3) Indeterminate point
(4) Axe
(5) Thinned biface (knife)
(6) Chopper
(7) Drill
(8) Adze/Gouge
(9) Marginal Bifacial Retouch
(10) Indeterminate Biface

Other: (1) Complete
(2) Tip
(3) Mid-section
(4) Base/stem
(5) Longitudinal fracture
(6) Tang
(7) Blade
(8) Proximal/Medial (all but tip)
(9) Distal/Medial (all but base)
(10) Indeterminate fragment

Class: (2) Unfinished Bifaces

Type: (1) Aborted, Early
(2) Aborted, Late
(3) Arrow Point Preform
(4) Dart Point Preform
(9) Unidentified fragment

Other: (1) Complete
(2) Fragment

Class: (3) Uniface

- Type:**
- (1) Marginally modified/retouched
 - (2) Borer (has alternating edge retouch)
 - (3) Burin
 - (4) Denticulate
 - (5) End Scraper
 - (6) Side Scraper
 - (7) Scraper with Graver Spur
 - (8) Graver (retouch from one side only)
 - (9) Notch
 - (10) Burin spall
 - (11) Adze/gouge
 - (12) Circular Scraper
 - (13) Gossett Uniface
 - (14) End/Side Scraper
 - (98) Indeterminate

- Other:**
- (1) Complete
 - (2) Fragment

Class: (4) Unmodified Debitage

- Type:**
- (1) Primary Decortication Flake, 75% cortex
 - (2) Secondary Decortication Flake, less than 75% cortex
 - (3) Tertiary Flake, no cortex
 - (4) Shatter - undifferentiated
 - (5) Bifacial Thinning flake
 - (6) Platform Bearing Remnant
 - (7) Thin Flake frags
 - (8) Flake fragment 75-100% cortex
 - (9) Flake fragment 1-75% cortex
 - (10) Flake fragment - no cortex
 - (11) Shatter 75-100% cortex
 - (12) Shatter 1-75% cortex
 - (13) Shatter - no cortex
 - (99) Not applicable

- Other:**
- (99) not applicable

Class: (5) Utilized Flakes

- Type: (1) Primary Decortication Flake, 75% cortex
(2) Secondary Decortication Flake, less than 75% cortex
(3) Tertiary Flake, no cortex
(4) Shatter
(5) Bifacial Thinning Flake
(6) Platform Bearing Remnant
(7) Thin flake frags
(8) Flake fragment 75-100% cortex
(9) Flake fragment 1-75% cortex
(10) Flake fragment - no cortex
(11) Shatter 75-100% cortex
(12) Shatter 1-75% cortex
(13) Shatter - no cortex
(99) Not applicable

Other: (99) not applicable

Class: (6) Core

- Type: (1) Tested nodule/pebble
(2) Complete core
(3) Fragment/indeterminate

Other: (1) Bipolar
(2) Discoidal
(3) Blade
(4) Multidirectional
(99) Not applicable

Class: (7) Ground/Pecked/Battered stone

- Type: (1) Abrader
(2) Anvil
(3) Celt
(4) Hammerstone
(5) Incised Stone
(6) Mano
(7) Mano/hammerstone
(8) Metate/grinding slab
(9) Pendant/Gorget
(10) Polished stone
(11) Smoothed stone
(12) Sinker (fishing weight)
(13) Bead
(20) Multi purpose
(21) Atlatl weight/banner stone

Other: (1) Complete
(2) Fragment

Class: (8) Unworked stone and Minerals

- Type: (1) Manuports (NAT)
(2) Burned rock (includes FCR)

Other: (99) Not applicable

TYPENAME: Specific names of stone tool types and varieties as applicable (i.e., Gary Point).

MAT: Material Type Codes

- | | |
|------------------------------|-------------------------------------|
| (1) Chert | (36) Mudstone |
| (2) Quartzite | (37) Iron Concretion |
| (3) Basalt | (38) Quartzitic Sandstone |
| (4) Silicified wood | (39) Palmwood |
| (5) Petrified wood | |
| (6) Siltstone | (40) Edwards Chert |
| (7) Quartz | (41) Frisco Chert |
| (8) Limestone | (42) Arbuckle Mts. OK |
| (9) Sandstone | (43) Potters Quartzite |
| | (44) Quachita Mts. Chert |
| (10) Steatite | (45) Reeds Spring Chert |
| (11) Hematite | (46) Red River Yellow Siltstone |
| (12) Limonite | (47) Battiest Chert |
| (13) Andesite | (48) Penters Chert |
| (14) Rhyolite | (49) Woodford Chert |
| (15) Schist | (50) Pinetop Chert |
| (16) Obsidian | (51) Black Knob Ridge Chert (Green) |
| (17) Silicified breccia | |
| (18) Scoria/vesicular Basalt | (80) Igneous, other |
| (19) Metasediment | (81) Metamorphic, other |
| | |
| (20) Jasper | (98) Unidentifiable |
| (21) Novaculite | (99) Not applicable |
| (22) Dolomite | |
| (23) Bowie Novaculite | |
| (24) Woodford Chert | |
| (25) Tecovas Chert | |
| (26) Alibates | |
| (27) Ogallala Quartzite | |
| (28) Chalcedony | |
| (29) Arkansas Novaculite | |
| | |
| (30) Granite | |
| (31) Coastal Plain Chert | |
| (32) Tallahatta Quartzite | |
| (33) Coastal Plain Agate | |
| (34) Ferruginous Sandstone | |
| (35) Conglomerate | |

HCDE: Heat treatment

- (1) Yes
- (2) No
- (3) Burned (pot lidded)
- (98) Indeterminate
- (99) Not applicable

QTY: Number of items.

SIZE: Size code for debitage or actual measurements (L-x-W-x-T)

- (1) > 25 mm (1 inch or 25 mm sieve)
- (2) 19 mm to 25 mm (3/4 inch or 19 mm sieve)
- (3) 12.5 mm to 19 mm (1/2 inch or 12.5 mm sieve)
- (4) 9.5 mm to 12.5 mm (3/8 inch or 9.5 mm sieve)
- (5) 6.3 mm to 9.5 mm (1/4 inch or 6.3 mm sieve)
- (6) < 6.3 mm (less than 1/4 inch or 6.3 mm sieve)

WEIGHT: Weight as applicable (normally used for Burned Rock).

GROUP: (CER) Prehistoric Ceramics

Class: (9) Ceramics/Baked Clay

- Type:**
- (10) Impressed Daub
 - (11) Baked clay-unimpressed
 - (20) Vessel/Container - complete or sizeable fragment (greater than 1/2 vessel)
 - (21) Body Sherd
 - (22) Rim Sherd
 - (23) Basal Sherd
 - (24) Appendage (lug, handle)
 - (25) Sherd fragment
 - (26) Neck Sherd
 - (30) Pipe - complete
 - (31) Pipe stem fragment
 - (32) Pipe bowl fragment
 - (40) Figurine - complete
 - (41) Figurine - fragment
 - (50) Bead - complete
 - (51) Bead - fragment

Other: Decorative Technique

- (10) Plain
- (12) Incising
- (13) Trilled incising
- (14) Combed incising
- (15) Engraving
- (16) Fine engraving
- (17) Stamping
- (18) Rocker stamping
- (19) Punctating
- (20) Tool punctating
- (21) Fingernail punctating
- (22) Pinching
- (23) Banding

- (24) Brushing
- (25) Ridging
- (26) Cordmarking
- (27) Fabric marking
- (28) Applique
- (29) Applique bands
- (30) Applique nodes
- (31) Effigy appliques
- (32) Modeling
- (33) Molding
- (34) Check-stamped
- (35) Complicated-stamped
- (36) Punctated Applique
- (40) Incised, overhanging line
- (41) Neck banding
- (42) Fine brushing
- (43) Punctated incised
- (44) Brushing/Punctating
- (45) Red filmed
- (46) Polished
- (47) Burnished
- (48) Incised/Punctated
- (49) Red slipped
- (98) indeterminate
- (99) not applicable

TYPENAME: Specific name of various ceramic types and varieties (i.e., Canton Incised).

MAT: Inclusions/Temper

- (1) None visible
- (2) Fired and crushed clay and/or Grog (crushed potsherd)
- (3) Grit or rock (unspecified type)
- (4) Sand (specifically quartz or quartzite grains)
- (5) Hematite (red or black iron ore)
- (6) Limestone or dolomite
- (7) Bone (either calcined or unburned)
- (8) Shell (either burned or unburned)
- (9) Fiber
- (10) Mica (white or dark)
- (11) Grog/bone
- (12) Sand/mica
- (13) Baked clay/sherd/grog/bone
- (14) Baked Clay/sherd/grog/grit
- (98) Indeterminate
- (99) Not applicable

HEAT: (99) Not applicable

QTY: Number of Items

SIZE: Size as applicable (length-x-width-x-thickness)

WEIGHT: Weight as applicable.

GROUP: (FAU) Fauna

Class: (10) Animal Bone

Type: (1) Unworked
(2) Worked
(3) Fossilized
(4) Burned

Other: (1) Bead
(2) Awl
(3)
(4)
(10) Cutmarks
(99) Not applicable

Class: (11) Shell

Type: (1) Unworked
(2) Worked
(3) Fossilized
(4) Burned

Other: (99) Not applicable

TYPENAME: Used to list species identifications.

QTY: Number of items.

WEIGHT: Weight of faunal remains as applicable.

GROUP: (VEG) Vegetal

Class: (12) Vegetal

Type: (1) Charcoal
(2) Seeds
(3)
(98) Indeterminate plant remains

Other: (99) Not applicable

QTY: Number of items as applicable.

WEIGHT: Weight of vegetal remains.

Date: 04/09/96

Geo-Marine Inc.
#1110-036 Fort Sill Testing
Prehistoric Artifact Data

Rec No.	Bag No.	Art No.	Class	Type	Other	Material	Heat Treat.	Qty.	Size(mm) (LxWxT)	Weight (grams)
34CM042 Unit: UNIT 2 Lev: 2										
1	12		Unmodified Debitage	Tertiary flake	N/A	Andesite	no	1	12.5-19mm	2.4
2	12		Unmodified Debitage	Tertiary flake	N/A	Chert	yes	1	6.3-9.5mm	0.7
3	12		Unmodified Debitage	Tertiary flake	N/A	Andesite	no	1	6.3-9.5mm	1.2
4	12		Unmodified Debitage	Shatter, 1-75% cortex	N/A	Chert	yes	1	6.3-9.5mm	0.5
34CM042 Unit: UNIT 2 Lev: 3										
5	13		Unmodified Debitage	Tertiary flake	N/A	Chert	no	1	6.3-9.5mm	0.2
34CM042 Unit: UNIT 3 Lev: 1										
15	142		Unmodified Debitage	Flake frag, no cortex	N/A	Conglomerate	no	1	6.3-9.5mm	0.2
16	142		Unmodified Debitage	Tertiary flake	N/A	Potters Quartzite	no	1	6.3-9.5mm	0.1
17	142		Unmodified Debitage	Tertiary flake	N/A	Potters Quartzite	no	1	6.3-9.5mm	0.3
34CM042 Unit: UNIT 3 Lev: 2										
6	15		Unmodified Debitage	Secondary flake	N/A	Potters Quartzite	no	1	12.5-19mm	2.8
7	15		Unmodified Debitage	Shatter, 1-75% cortex	N/A	Potters Quartzite	no	1	6.3-9.5mm	0.2
34CM042 Unit: UNIT 3 Lev: 3										
8	16		Unmodified Debitage	Tertiary flake	N/A	Potters Quartzite	no	1	9.5-12.5mm	1.0
9	16		Unmodified Debitage	Shatter, no cortex	N/A	Chalcedony	no	1	6.3-9.5mm	0.6
34CM042 Unit: UNIT 3 Lev: 4										
10	17		Unmodified Debitage	Secondary flake	N/A	Potters Quartzite	indet.	1	6.3-9.5mm	0.5
11	17		Unmodified Debitage	Bifacial thinning	N/A	Potters Quartzite	no	1	< 6.3mm	0.1

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Rec No.	Bag No.	Art No.	Class	Type	Other	Material	Heat Treat.	Qty.	Size(mm) (LxWxT)	Weight (grams)
34CM042			Unit: UNIT 4	Lev: 2						
12	19		Unmodified Debitage	Tertiary flake	N/A	Chert	no	1	6.3-9.5mm	0.5
13	19		Unmodified Debitage	Bifacial thinning	N/A	Chert	no	1	6.3-9.5mm	0.2
34CM042			Unit: UNIT 8	Lev: 1						
14	21		Unmodified Debitage	Flake frag, no cortex	N/A	Chert	no	1	6.3-9.5mm	0.3
34CM058			Unit: UNIT 1	Lev: 1						
19	1		Unmodified Debitage	Secondary flake	N/A	Potters Quartzite	indet.	1	19-25mm	11.0
20	1		Unmodified Debitage	Tertiary flake	N/A	Potters Quartzite	no	1	12.5-19mm	4.5
22	1		Unmodified Debitage	Secondary flake	N/A	Chert	no	1	9.5-12.5mm	0.8
23	1		Unmodified Debitage	Secondary flake	N/A	Chert	no	1	9.5-12.5mm	1.3
24	1		Unmodified Debitage	Tertiary flake	N/A	Potters Quartzite	no	1	9.5-12.5mm	1.6
25	1		Unmodified Debitage	Tertiary flake	N/A	Potters Quartzite	no	1	9.5-12.5mm	1.1
26	1		Unmodified Debitage	Tertiary flake	N/A	Potters Quartzite	no	1	9.5-12.5mm	0.9
27	1		Unmodified Debitage	Tertiary flake	N/A	Conglomerate	indet.	1	9.5-12.5mm	2.3
28	1		Unworked Stone	Cobble	N/A	Quartzite	indet.	1	6.3-9.5mm	1.2
29	1		Unmodified Debitage	Bifacial thinning	N/A	Chert	no	1	6.3-9.5mm	0.2
30	1		Unmodified Debitage	Bifacial thinning	N/A	Chert	no	1	6.3-9.5mm	0.2
31	1		Unmodified Debitage	Shatter, no cortex	N/A	Chert	no	1	6.3-9.5mm	0.5
32	1		Unmodified Debitage	Secondary flake	N/A	Quartz	no	1	6.3-9.5mm	0.9
33	1		Unmodified Debitage	Tertiary flake	N/A	Quartz	no	1	6.3-9.5mm	0.5
34	1		Unmodified Debitage	Shatter, no cortex	N/A	Quartz	no	1	6.3-9.5mm	0.2
35	1		Unmodified Debitage	Shatter, no cortex	N/A	Potters Quartzite	no	1	6.3-9.5mm	1.4
36	1		Unmodified Debitage	Tertiary flake	N/A	Potters Quartzite	no	1	6.3-9.5mm	0.5

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Geo-Marine Inc.
#1110-036 Fort Sill Testing
Prehistoric Artifact Data

Rec No.	Bag No.	Art No.	Class	Type	Other	Material	Heat Treat.	Qty.	Size(mm) (LxWxT)	Weight (grams)
37	1		Unmodified Debitage	Flake frag, >75% cortex	N/A	Quartzite Potters	no	1	6.3-9.5mm	0.5
38	1		Unmodified Debitage	Shatter, no cortex	N/A	Quartzite Potters	yes	1	6.3-9.5mm	1.1
39	1		Unmodified Debitage	Bifacial thinning	N/A	Quartzite Potters	no	1	6.3-9.5mm	0.1
40	1		Unmodified Debitage	Tertiary flake	N/A	Quartzite Potters	yes	1	6.3-9.5mm	0.4
41	1		Unmodified Debitage	Tertiary flake	N/A	Quartzite Potters	no	1	6.3-9.5mm	0.2
42	1		Unmodified Debitage	Primary flake	N/A	Chert	burned	1	< 6.3mm	0.3
43	1		Unmodified Debitage	Bifacial thinning	N/A	Chert	yes	1	< 6.3mm	0.1
44	1		Unmodified Debitage	Shatter, no cortex	N/A	Chalcedony	no	1	< 6.3mm	0.1
45	1		Unmodified Debitage	Bifacial thinning	N/A	Chalcedony	no	1	< 6.3mm	0.1
46	1		Unmodified Debitage	Shatter, no cortex	N/A	Quartz	no	1	< 6.3mm	0.2
47	1		Unmodified Debitage	Bifacial thinning	N/A	Potters	no	1	< 6.3mm	0.1
18	1	1	Finished Biface Tool	Dart Point	Base/Stem	Quartzite Potters	no	1	40 X 24 X 7	7.4
21	1	2	Finished Biface Tool	Dart Point	Base/Stem	Quartzite Potters	burned	1	22 X 22 X 11	5.7
34CM058	Unit	1	Lev: 2							
48	2		Unmodified Debitage	Shatter, no cortex	N/A	Conglomerate	indet.	1	12.5-19mm	1.5
49	2		Unmodified Debitage	Primary flake	N/A	Potters	indet.	1	12.5-19mm	3.0
50	2		Unmodified Debitage	Shatter, no cortex	N/A	Quartzite Quartz	no	1	12.5-19mm	4.0
52	2		Unmodified Debitage	Shatter, no cortex	N/A	Sandstone	indet.	1	6.3-9.5mm	1.4
53	2		Unmodified Debitage	Plat-bearing remnant	N/A	Andesite	no	1	6.3-9.5mm	0.2
54	2		Unmodified Debitage	Tertiary flake	N/A	Alibates	no	1	6.3-9.5mm	0.4
55	2		Unmodified Debitage	Angular shatter	N/A	Chert	no	1	6.3-9.5mm	0.9

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Geo-Marine Inc.
#1110-036 Fort Sill Testing
Prehistoric Artifact Data

Rec No.	Bag No.	Art No.	Class	Type	Other	Material	Heat Treat.	Qty.	Size(mm) (LxWxT)	Weight (grams)
56	2		Unmodified Debitage	Secondary flake	N/A	Chert	no	1	6.3-9.5mm	0.2
57	2		Unmodified Debitage	Bifacial thinning	N/A	Chert	no	1	6.3-9.5mm	0.1
58	2		Unmodified Debitage	Tertiary flake	N/A	Chert	no	1	6.3-9.5mm	0.1
59	2		Unmodified Debitage	Flake frag, no cortex	N/A	Chert	no	1	6.3-9.5mm	0.2
60	2		Unmodified Debitage	Flake frag, no cortex	N/A	Chert	no	1	6.3-9.5mm	0.4
61	2		Unmodified Debitage	Tertiary flake	N/A	Chert	yes	1	6.3-9.5mm	0.1
62	2		Unmodified Debitage	Flake frag, no cortex	N/A	Potters	no	1	6.3-9.5mm	0.4
						Quartzite				
63	2		Unmodified Debitage	Shatter, no cortex	N/A	Potters	indet.	1	6.3-9.5mm	0.7
						Quartzite				
64	2		Unmodified Debitage	Tertiary flake	N/A	Potters	indet.	1	6.3-9.5mm	0.2
						Quartzite				
65	2		Unmodified Debitage	Shatter, 1-75% cortex	N/A	Potters	indet.	1	6.3-9.5mm	0.1
						Quartzite				
51	2	1	Utilized flakes	Primary flake	N/A	Chalcedony	no	1	9.5-12.5mm	2.2
34CM058			Unit: UNIT 3	Lev: 1						
66	3		Unmodified Debitage	Flake frag, 1-75% cortex	N/A	Chert	no	1	< 6.3mm	0.1
34CM058			Unit: UNIT 3	Lev: 2						
67	4		Unmodified Debitage	Shatter, no cortex	N/A	Chert	no	1	6.3-9.5mm	0.7
68	4		Unmodified Debitage	Flake frag, 1-75% cortex	N/A	Chert	no	1	6.3-9.5mm	0.3
69	4		Unmodified Debitage	Flake frag, >75% cortex	N/A	Potters	no	1	6.3-9.5mm	0.2
						Quartzite				
70	4		Unmodified Debitage	Flake frag, >75% cortex	N/A	Chert	no	1	< 6.3mm	0.1
71	4		Unmodified Debitage	Angular shatter	N/A	Chert	indet.	1	< 6.3mm	0.1
34CM058			Unit: UNIT 3	Lev: 3						
72	5		Unmodified Debitage	Secondary flake	N/A	Chert	no	1	6.3-9.5mm	1.2
34CM058			Unit: UNIT 4	Lev: 2						
73	6		Unmodified Debitage	Tertiary flake	N/A	Potters	no	1	12.5-19mm	3.4

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Rec No.	Bag No.	Art No.	Class	Type	Other	Material	Heat Treat.	Qty.	Size(mm) (LxWxT)	Weight (grams)
74	6		Unmodified Debitage	Tertiary flake	N/A	Quartzite	no	1	6.3-9.5mm	1.0
75	6		Unmodified Debitage	Tertiary flake	N/A	Chert	no	1	6.3-9.5mm	0.2
76	6		Unmodified Debitage	Shatter, no cortex	N/A	Quartz	no	1	6.3-9.5mm	0.8
77	6		Unmodified Debitage	Shatter, no cortex	N/A	Quartz	no	1	6.3-9.5mm	0.9
34CM058			Unit: UNIT 4	Lev: 3						
78	7		Unmodified Debitage	Tertiary flake	N/A	Andesite	no	1	12.5-19mm	5.2
79	7		Unmodified Debitage	Tertiary flake	N/A	Potters	no	1	9.5-12.5mm	1.1
80	7		Unmodified Debitage	Shatter, 1-75% cortex	N/A	Quartzite	no	1	6.3-9.5mm	0.8
34CM058			Unit: UNIT 4	Lev: 4						
81	8		Unmodified Debitage	Tertiary flake	N/A	Quartz	no	1	6.3-9.5mm	0.4
34CM058			Unit: UNIT 5	Lev: 1						
82	9		Unmodified Debitage	Tertiary flake	N/A	Chert	no	1	6.3-9.5mm	0.2
83	9		Unmodified Debitage	Flake frag, no cortex	N/A	Chert	yes	1	6.3-9.5mm	0.2
84	9		Unmodified Debitage	Angular shatter	N/A	Potters	no	1	6.3-9.5mm	0.3
34CM058			Unit: UNIT 5	Lev: 2						
85	10		Unmodified Debitage	Flake frag, no cortex	N/A	Potters	no	1	6.3-9.5mm	0.1
86	10		Unmodified Debitage	Tertiary flake	N/A	Quartzite	indet.	1	< 6.3mm	0.1
34CM058			Unit: UNIT 8	Lev: 1						
88	11		Unmodified Debitage	Tertiary flake	N/A	Chert	yes	1	6.3-9.5mm	0.4
89	11		Unmodified Debitage	Flake frag, no cortex	N/A	Chert	no	1	< 6.3mm	0.2
90	11		Unmodified Debitage	Shatter, >75% cortex	N/A	Chert	no	1	< 6.3mm	0.2
87	11	1	Uniface	Indeterminate	Fragment	Chert	yes	1	15 x 15 x 5	1.3

Date: 04/09/96

Geo-Marine Inc.
#1110-036 Fort Sill Testing
Prehistoric Artifact Data

Rec No.	Bag No.	Art No.	Class	Unit:	Lev:	Type	Other	Material	Heat Treat.	Qty.	Size(mm) (LxWxT)	Weight (grams)
34CM058			Unit: UNIT 9	Lev: 1								
91	55		Unmodified Debitage			Tertiary flake	N/A	Chert	indet.	1	6.3-9.5mm	0.5
92	55		Unmodified Debitage			Tertiary flake	N/A	Quartz	no	1	6.3-9.5mm	0.5
93	55		Unmodified Debitage			Angular shatter	N/A	Conglomerate	indet.	1	< 6.3mm	0.1
34CM107			Unit: UNIT 5	Lev: 2								
94	144		Unmodified Debitage			Shatter, no cortex	N/A	Chert	no	1	6.3-9.5mm	0.6
34CM235			Unit: SURF 0	Lev:								
111	130	1	Ground/Peck/Battered			Mano/metate	N/A	Sandstone	no	1	117x63x62	611.1
34CM235			Unit: UNIT 1	Lev: 1								
95	124		Unmodified Debitage			Tertiary flake	N/A	Potters Quartzite	no	1	9.5-12.5mm	1.9
112	148		Unworked Stone			Burned Rock	N/A	Conglomerate	yes	3		247.2
34CM235			Unit: UNIT 2	Lev: 1								
96	125		Unmodified Debitage			Primary flake	N/A	Chalcedony	no	1	6.3-9.5mm	0.7
34CM235			Unit: UNIT 3	Lev: 1								
97	126		Unmodified Debitage			Tertiary flake	N/A	Andesite	no	1	12.5-19mm	2.6
98	126		Unmodified Debitage			Shatter, 1-75% cortex	N/A	Potters Quartzite	no	1	9.5-12.5mm	1.3
99	126		Unmodified Debitage			Secondary flake	N/A	Potters Quartzite	no	1	6.3-9.5mm	0.5
100	126		Unmodified Debitage			Angular shatter	N/A	Potters Quartzite	no	1	6.3-9.5mm	0.3
101	126		Unmodified Debitage			Tertiary flake	N/A	Potters Quartzite	no	1	6.3-9.5mm	0.9
102	126		Unmodified Debitage			Angular shatter	N/A	Potters Quartzite	no	1	6.3-9.5mm	0.5

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Geo-Marine Inc:
#1110-036 Fort Sill Testing
Prehistoric Artifact Data

Rec No.	Bag No.	Art No.	Class	Type	Other	Material	Heat Treat.	Qty.	Size(mm) (LxWxT)	Weight (grams)
103	126		Unmodified Debitage	Tertiary flake	N/A	Andesite	no	1	< 6.3mm	0.2
104	126		Unmodified Debitage	Bifacial thinning	N/A	Chert	yes	1	< 6.3mm	0.1
34CM235			Unit: UNIT 3 Lev: 2							
105	127		Unmodified Debitage	Secondary flake	N/A	Potters Quartzite	indet.	1	12.5-19mm	3.5
106	127		Unmodified Debitage	Secondary flake	N/A	Potters Quartzite	indet.	1	12.5-19mm	2.4
107	127		Unmodified Debitage	Primary flake	N/A	Chert	indet.	1	6.3-9.5mm	0.8
108	127		Unmodified Debitage	Bifacial thinning	N/A	Potters Quartzite	no	1	6.3-9.5mm	0.1
109	127		Unmodified Debitage	Tertiary flake	N/A	Potters Quartzite	no	1	< 6.3mm	0.1
34CM235			Unit: UNIT 4 Lev: 2							
110	128		Unmodified Debitage	Tertiary flake	N/A	Andesite	no	1	19-25mm	19.2
34CM239			Unit: SURF 0 Lev:							
113	27	1	Finished Biface Tool	Dart Point	Tip	Chert	indet.	1	21 X 20 X 5	1.8
114	28	1	Uniface	End Scraper	Complete	Chert	burned	1	32 X 27 X 10	13.0
150	54		Finished Biface Tool	Dart Point	Base/Stem	Chert	no	1	15 X 16 X 4	1.6
34CM239			Unit: UNIT 3 Lev: 2							
115	31		Unmodified Debitage	Shatter, 1-75% cortex	N/A	Potters Quartzite	indet.	1	9.5-12.5mm	1.8
116	31		Unmodified Debitage	Tertiary flake	N/A	Potters Quartzite	no	1	6.3-9.5mm	0.2
117	31		Unmodified Debitage	Tertiary flake	N/A	Potters Quartzite	no	1	6.3-9.5mm	0.3
118	31		Unmodified Debitage	Tertiary flake	N/A	Potters Quartzite	no	1	6.3-9.5mm	0.9

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Geo-Marine Inc.
#1110-036 Fort Sill Testing
Prehistoric Artifact Data

Rec No.	Bag No.	Art No.	Class	Unit	Lev	Type	Other	Material	Heat Treat.	Qty.	Size(mm) (LxWxT)	Weight (grams)
34CM239			Unit: UNIT 4	Lev: 1								
120	32		Unmodified Debitage			Tertiary flake	N/A	Potters Quartzite	no	1	12.5-19mm	4.8
121	32		Unmodified Debitage			Flake frag, no cortex	N/A	Chert	no	1	6.3-9.5mm	0.2
122	32		Unmodified Debitage			Tertiary flake	N/A	Chert	no	1	6.3-9.5mm	0.6
123	32		Unmodified Debitage			Tertiary flake	N/A	Chalcedony	no	1	< 6.3mm	0.2
119	32	1	Uniface			End Scraper	Complete	Alibates	no	1	32 X 21 X 5	4.0
34CM239			Unit: UNIT 5	Lev: 1								
125	33		Unmodified Debitage			Tertiary flake	N/A	Potters Quartzite	no	1	9.5-12.5mm	1.3
126	33		Unmodified Debitage			Tertiary flake	N/A	Potters Quartzite	no	1	6.3-9.5mm	0.6
127	33		Unmodified Debitage			Bifacial thinning	N/A	Chert	no	1	< 6.3mm	0.2
128	33		Unmodified Debitage			Flake frag, no cortex	N/A	Potters Quartzite	indet.	1	< 6.3mm	0.1
129	33		Unmodified Debitage			Tertiary flake	N/A	Quartz	no	1	< 6.3mm	0.2
124	33	1	Finished Biface Tool			Indet Biface	Indet. fragment	Potters Quartzite	indet.	1	12 X 14 X 6	1.0
34CM239			Unit: UNIT 5	Lev: 2								
130	34		Unmodified Debitage			Flake frag, no cortex	N/A	Chert	indet.	1	6.3-9.5mm	0.6
131	34		Unmodified Debitage			Flake frag, 1-75% cortex	N/A	Potters Quartzite	no	1	6.3-9.5mm	0.2
132	34		Unmodified Debitage			Bifacial thinning	N/A	Potters Quartzite	no	1	6.3-9.5mm	0.2
133	34		Unmodified Debitage			Angular shatter	N/A	Andesite	no	1	6.3-9.5mm	0.2
134	34		Unmodified Debitage			Angular shatter	N/A	Quartzite	no	1	6.3-9.5mm	0.2
135	34		Unmodified Debitage			Bifacial thinning	N/A	Chert	no	1	< 6.3mm	0.1
136	34		Unmodified Debitage			Bifacial thinning	N/A	Chalcedony	no	1	< 6.3mm	0.1
137	34		Unmodified Debitage			Tertiary flake	N/A	Potters Quartzite	no	1	< 6.3mm	0.2

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Geo-Marine Inc.
#1110-036 Fort Sill Testing
Prehistoric Artifact Data

Rec No.	Bag No.	Art No.	Class	Type	Other	Material	Heat Treat.	Qty.	Size(mm) (LxWxT)	Weight (grams)
34CM239 151	137	Unit: UNIT 6 Lev: 1 Unmodified Debitage	Tertiary flake	N/A	Potters Quartzite	yes	1	6.3-9.5mm	0.5	
34CM239 138	36	Unit: UNIT 8 Lev: 1 Unmodified Debitage	Tertiary flake	N/A	Potters Quartzite	no	1	9.5-12.5mm	0.6	
34CM239 139	39	Unit: UNIT 13 Lev: 1 Unmodified Debitage	Bifacial thinning	N/A	Chert	no	1	6.3-9.5mm	0.2	
140	39	Unmodified Debitage	Tertiary flake	N/A	Chert	no	1	< 6.3mm	0.1	
34CM239 141	40	Unit: UNIT 13 Lev: 2 Unmodified Debitage	Bifacial thinning	N/A	Potters Quartzite	no	1	6.3-9.5mm	0.3	
34CM239 142	41	Unit: UNIT 15 Lev: 1 Unmodified Debitage	Tertiary flake	N/A	Potters Quartzite	no	1	9.5-12.5mm	0.6	
143	41	Unmodified Debitage	Flake frag, no cortex	N/A	Chert	no	1	6.3-9.5mm	0.3	
34CM239 144	42	Unit: UNIT 16 Lev: 1 Unmodified Debitage	Tertiary flake	N/A	Andesite	no	1	12.5-19mm	2.0	
145	42	Unmodified Debitage	Tertiary flake	N/A	Potters Quartzite	no	1	6.3-9.5mm	0.5	
146	42	Unmodified Debitage	Tertiary flake	N/A	Potters Quartzite	no	1	6.3-9.5mm	0.5	
34CM239 147	43	Unit: UNIT 17 Lev: 1 Unmodified Debitage	Bifacial thinning	N/A	Chert	no	1	< 6.3mm	0.1	
148	43	Unmodified Debitage	Angular shatter	N/A	Conglomerate	indet.	1	< 6.3mm	0.1	

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Geo-Marine Inc.
#1110-036 Fort Sill Testing
Prehistoric Artifact Data

Rec No.	Bag No.	Art No.	Class	Type	Other	Material	Heat Treat.	Qty.	Size(mm) (LxWxT)	Weight (grams)
34CM239 Unit: UNIT 17 Lev: 2										
149	44		Unmodified Debitage	Flake frag, no cortex	N/A	Chert	no	1	9.5-12.5mm	0.6
34CM315 Unit: SURF 0 Lev:										
152	49	1	Unmodified Debitage	Primary flake	N/A	Potters Quartzite	no	1	> 25mm	49.1
153	50	1	Ground/Peck/Battered	Hammerstone	Complete	Quartzite	no	1	4.7 X 4.2 X 2.9	86.9
154	51	1	Core	Fragment/Indet	Discoidal	Potters Quartzite	no	1	8.2 X 5.5 X 4.4	162.1
34CM407 Unit: SURF 0 Lev:										
161	24		Unmodified Debitage	Shatter, 1-75% cortex	N/A	Chalcedony	no	1	12.5-19mm	3.2
162	25		Uniface	End/Side Scraper	Complete	Alibates	no	1	3.5 X 1.8 X .8	5.8
34CM407 Unit: UNIT 1 Lev: 1										
155	22		Unmodified Debitage	Tertiary flake	N/A	Potters Quartzite	indet.	1	6.3-9.5mm	1.0
34CM407 Unit: UNIT 1 Lev: 2										
156	23		Unmodified Debitage	Bifacial thinning	N/A	Chert	no	1	6.3-9.5mm	0.2
157	23		Unmodified Debitage	Bifacial thinning	N/A	Chalcedony	no	1	6.3-9.5mm	0.1
158	23		Unmodified Debitage	Shatter, no cortex	N/A	Conglomerate	no	1	6.3-9.5mm	0.5
159	23		Unmodified Debitage	Tertiary flake	N/A	Potters Quartzite	no	1	6.3-9.5mm	0.3
160	23		Unmodified Debitage	Shatter, no cortex	N/A	Potters Quartzite	no	1	6.3-9.5mm	0.2
34CM425 Unit: UNIT 6 Lev: 1										
163	47		Unmodified Debitage	Secondary flake	N/A	Potters Quartzite	indet.	1	> 25mm	21.3

Date: 04/09/96

Geo-Marine Inc.
#1110-036 Fort Sill Testing
Prehistoric Artifact Data

Rec No.	Bag No.	Art No.	Class	Unit	Lev	Type	Other	Material	Heat Treat.	Qty.	Size(mm) (LxWxT)	Weight (grams)
34CM428												
169	140		Unit: UNIT 7	Unmodified Debitage	Lev: 1	Shatter, no cortex	N/A	Chert	no	1	6.3-9.5mm	0.3
170	140			Unmodified Debitage		Shatter, no cortex	N/A	Chert	no	1	< 6.3mm	0.2
171	140			Unmodified Debitage		Flake frag, no cortex	N/A	Chert	no	1	< 6.3mm	0.5
172	140			Unmodified Debitage		Shatter, no cortex	N/A	Chert	no	1	< 6.3mm	0.2
173	140			Unmodified Debitage		Bifacial thinning	N/A	Potters Quartzite	no	1	< 6.3mm	0.1
34CM428												
164	100		Unit: UNIT 7	Unmodified Debitage	Lev: 2	Shatter, no cortex	N/A	Chert	no	1	6.3-9.5mm	0.3
165	100			Unmodified Debitage		Shatter, no cortex	N/A	Chert	no	1	6.3-9.5mm	0.4
166	100			Unmodified Debitage		Shatter, no cortex	N/A	Chert	no	1	< 6.3mm	0.1
167	100			Unmodified Debitage		Flake frag, no cortex	N/A	Chert	no	1	< 6.3mm	0.1
168	100			Unmodified Debitage		Bifacial thinning	N/A	Chert	no	1	< 6.3mm	0.1
34CM476												
174	45		Unit: UNIT 4	Unmodified Debitage	Lev: 2	Tertiary flake	N/A	Potters Quartzite	no	1	> 25mm	25.1
34CM476												
175	46		Unit: UNIT 4	Unmodified Debitage	Lev: 3	Secondary flake	N/A	Potters Quartzite	no	1	12.5-19mm	5.6
176	46			Unmodified Debitage		Secondary flake	N/A	Potters Quartzite	no	1	12.5-19mm	5.8

APPENDIX C

FRAMEWORK FOR ANALYSIS OF THE HISTORICAL ARCHEOLOGICAL MATERIALS, CODING FORM USED FOR HISTORIC ARTIFACT ANALYSIS, AND SUMMARY TABLE FOR HISTORIC ARTIFACTS

by
Steven M. Hunt

As was discussed in Chapter 4, the analysis of the historic material made use of five major analytical categories or classes of artifacts, consisting of:

- (1) Domestic;
- (2) Furnishing;
- (3) Architectural;
- (4) Personal; and
- (5) Activities.

Unidentified metal fragments and ceramic or glass sherds which were unclassifiable as to category were placed in a separate, indeterminate category. Although the use of these artifact categories may perpetuate ideas about functional classifications, it is felt that at the survey level of research, such an analytical framework is the most efficient way to handle the artifactual data.

Major artifact categories were sorted into various subcategories, including animal bone, shell, ceramic, glass, metal, plastic, building materials, and natural materials. These were then sorted into various classes, types, and subtypes, depending on the type of subcategory. In the case of ceramics and glass, when these subtypes could be associated with manufacture or use dates, they were used to compute Mean Ceramic Dates (MCD) or Mean Glass Dates (MGD). The general nature of each of the major artifact categories is discussed below.

Domestic Artifacts

The domestic category was applied to artifacts related to food service (i.e., tableware), food storage (including food preparation), and household furnishings. The tableware subcategory subsumes some ceramic, glass, and metal artifact types. Ceramic tablewares include stoneware, refined earthenware, coarse earthenware, and porcelain types. Particular items were identified as to types and subtypes, based on temporally sensitive technological (e.g., white/whiteware, light blue tint whiteware, blue tint whiteware, blue tint ironstone, high-fired ironstone, ironstone/whiteware, transitional whiteware), decorative (e.g., decalcomania, flow blue, blue shell edge), and/or other attributes (e.g., nonvitrified, vitrified, molded), and assigned dates of production on this basis.

Food storage items or storagewares also were subdivided as to whether they were ceramic (stoneware), glass, or metal. The stoneware items were further subdivided into types and subtypes using technological and decorative attributes, such as paste (e.g., colored) and various combinations of exterior treatment (e.g., gray bodied, bristol, cobalt, slipped, Albany slip, natural slip) and interior treatment (e.g., blue gray, Bristol, slipped, Albany slip, unglazed). These attributes then formed the basis for assigning production dates to individual specimens.

Glass storageware was subdivided on the basis of color (e.g., clear, manganese solarized, ash tint, amber, light amber, brown/amber, opaque, cobalt blue, blue, aqua, light green, ruby); form (generally bottle); and either decorative characteristics (e.g., etched, embossed, stippled base), manufacturing attributes (e.g., mold made, machine made, press molded), or sometimes function (e.g., soda, beer/liquor, canning seal, depression glass, extract bottle). Individual items were then given artifact-specific dates based on the production dates for each of its various attributes, in combination.

Finally, an unidentified domestic category absorbed the remainder of the food-related items (such as bone and shell), and this material was not analyzed further. It should be noted that not all ceramics or glass artifacts fall within the domestic category. In some cases, artifacts of these materials belong within the architectural or activities categories.

Furnishings

The furnishings category includes all nonfood service or food storage-related household items, such as furniture, stoves, and lamp glass. The furnishings subcategory often comprises only a small proportion of the total identifiable historic artifact assemblage from rural sites and the actual recovered items may vary greatly. In many cases, the majority of the artifacts classified as furnishings consist of fragments of lamp glass.

Architectural Artifacts

The architectural category includes all items which could be related to buildings or structures. Subcategories of architectural items include such things as window glass, nails, brick, mortar and/or plaster, ceramic tile or pipe, and electrical items. Nails were further subdivided as to whether they were wrought, cut, or wire; while the brick was distinguished as to whether it was handmade, machine made, or high fired.

Personal Artifacts

The category of personal items was created to contain items of individual use, such as clothing, buttons, shoes, doll parts, cosmetic bottles, snuff bottles (identified on the basis of characteristics such as glass color, bottle shape, and lip shape), musical instruments, and smoking pipes. Usually, artifacts which can be classified in this category are rare, making this category the least frequently represented at most archeological sites.

Activities Artifacts

The final analytical category relates to what have been called activities items. This category includes all nonhousehold items, such as those associated with transportation activities and farm-related equipment. As with personal items, this category often makes up only a small proportion of the overall assemblage of identifiable historic artifacts from a site. Activity category items which may occur include truck or tractor parts, harness buckles, fence staples, fence wire, horseshoes or horseshoe nails, and firearms cartridges. Subcategories for activities items include tools, harness and equipment, transportation, machinery, farm-related, weapons, and coal.

Geo-Marine, Inc.
Historic Artifact Analysis Codebook
11 October 1995

Compiled by Marianne Marek

PROJNO Geo-Marine Project Number

RECNO Record Number, consecutive for each line of data

BAGNO Field Bag Number

ARTNO Artifact Number. Identification number for individual artifacts or groups of similar artifacts.

GROUP Analysis Group

HST	Historic Artifacts (all historic artifacts - ceramics, building materials, etc.)
FAU	Fauna, Animal Bone (see codes last page)
VEG	Charcoal and other plant remains (see codes last page)
NAT	Natural
SHL	Shell

CLASS Artifact Class

CCDE Class Translation

10	Animal Bone
11	Shell
13	Ceramic
14	Glass
15	Metal
16	Plastic
17	Other/miscellaneous materials
18	Building materials (brick, mortar, tile, stone, etc.)
19	Natural materials (coal, manuports, etc.)

Composite artifacts (artifacts made from a combination of the above classes) are classified under either the most diagnostic or the most predominant of the class types.

TYPE Subdivision of class (see codes following pages)

TCDE Type Translation

For all classes:	98	Indeterminate
	99	Not applicable
Class (13) Ceramic	1	Stoneware
	2	Whiteware
	3	Ironstone
	4	Ref. Earth
	5	Coarse
	6	Porcelain
	7	Buffware
	8	British Brown ware
	9	Yellow ware
	10	Creamware
	11	Pearlware
	12	Transitional Pearlware/Early Whiteware

Class (14) Glass	1	Aqua
	2	Manganese/solarized
	3	Lt. Tint
	4	Ash Tint
	5	Clear
	6	Milk glass (other = translucent or opaque)
	7	Olive
	8	Amber/Brown
	9	Lt. Green
	10	Cobalt Blue
	11	Emerald green
	12	Red
	13	Colored Milk glass
	14	Depression era colors (other = specific color, i.e., yellow, pink, green, etc.)
	15	Flash/Overlay (clear glass dipped and coated with another color)
	16	Purple
	17	Carnival (multi-colored w/iridescence)
	18	Black
	19	Light Blue
Class (15) Metal	1	Iron
	2	Brass
	4	Alloy
	5	Iron/Brass
	6	Tin
	7	Zinc
	8	Copper
	9	Brass/copper
	10	Aluminum
	11	Lead
	12	Chrome
Class (16) Plastic	1	Bakelite (1907-1940s)
	2	Modern Plastic (1942-present)
Class (17) Other/misc.	1	Slag
	2	Graphite
	3	Rubber
	4	Cinder
	5	Leather
	6	Tar
	7	Synthetic fibers (nylon, etc.)
	8	Battery
	9	Asphalt
Class (18) Building Materials	1	Mortar
	2	Brick (other = handmade or machine made)
	3	Stone
	4	Tile
	6	Concrete/Cement
	7	Linoleum
	8	Plaster
	9	Ceramic
	10	Tarpaper
	11	Asphalt shingle/roofing
	12	Slate

OTHER Additional descriptive information either written or coded as applicable.

98 Indeterminate
99 Not applicable

DATES Diagnostic dates for the classified group

98 Indeterminate
99 Not Applicable

QTY Quantity of artifacts within the classified group

FAMILY Functional grouping for classified artifacts

Code Translation

DOM Domestic
FUR Furnishing
ARC Architectural
PER Personal
ACT Activities
IND Indeterminate
N/A Not Applicable

COMMENT Any other comments about the classified artifact or group.

TYPE CODES DIVIDED BY GROUP AND CLASS

(note: these groups are normally analyzed by the prehistoric analyst or other specialists)

GROUP (CER) Ceramics/Baked Clay

Class (9) Ceramics/Baked Clay

Type: 10 Impressed Daub
11 Baked clay - unimpressed

Other: 99 Not applicable

GROUP (FAU) Fauna

Class (10) Animal Bone

Type: 1 Unworked
2 Worked
3 Fossilized
4 Burned

Other: 1 Bead
2 Awl
3 Cutmarks
4 Sawn

GROUP (SHL) Shell

Class (11) Shell

Type: 1 Unworked
2 Worked

3 Fossilized
4 Burned

Other: 99 Not applicable

GROUP (VEG) Vegetal

Class (12) Vegetal

Type: 1 Charcoal
2 Seeds
3 Peach Pits
4 Shells/hulls
98 Indeterminate plant remains

Other: 99 Not applicable

GROUP (NAT) Natural

Class (19) Natural

Type: 1 Coal
2 Slate
3 Stone/Rocks
4 Wood

Date: 04/09/96

Geo-Marine, Inc.
#1110-036 Fort Sill Testing
Historic Artifact Data

Rec No.	Bag No.	Art Type	Other	Dates	Group	Qty.	Analysis Comment
34CM042	196	Unit: UNIT 14 1 Brass	3 Lev: 1 BULLET	N/A	Activities	1	.45 CALIBER; LEAD FILLED
34CM042	5	Unit: UNIT 20 1 Brass	6 Lev: 1 BULLET	N/A	Activities	1	.45 CALIBER; LEAD FILLED
34CM058	168	Unit: UNIT 141 1 Mang/Solar	4 Lev: 2 BOTTLE	1880 - 1920	Domestic	1	SQUARE BEAD LIP
34CM107	4	Unit: UNIT 145 1 Iron	1 Lev: 2 CUT NAIL	1840-1900	Architectural	1	
34CM107	1	Unit: UNIT 143 1 Iron	5 Lev: 2 WIRE NAIL	POST 1890	Architectural	1	5.7 CM (7D)
34CM107	2	Unit: UNIT 143 2 Iron	WIRE NAIL	POST 1890	Architectural	1	5.1 CM (6D)
34CM107	3	Unit: UNIT 143 3 Iron	CORRUGATED NAIL	N/A	Architectural	1	
34CM235	142	Unit: UNIT 129 1 Iron	9 Lev: 2 MULE SHOE	N/A	Activities	1	WELL WORN
34CM239	167	Unit: SURF 29 1 Unworked	Lev: N/A	N/A	Indeterminate	1	
34CM239	13	Unit: SURF 30 1 Whiteware	DECORATED	1895 - 1950	Domestic	2	POLYCHROME FLORAL OVER-THE-GLAZE DECALCOMANIA; CROSSMEND; RIM
34CM239	9	Unit: UNIT 35 1 Brass/Copper	6 Lev: 1 RIVET	N/A	Activities	1	LEATHER RIVET
34CM239	10	Unit: UNIT 37 1 Iron	12 Lev: 1 CAST	N/A	Indeterminate	1	
34CM239	11	Unit: UNIT 37 2 Iron	WIRE NAIL	POST 1890	Architectural	1	7.6 CM (10D)
34CM239	12	Unit: UNIT 37 3 Amber/Brown	BOTTLE	POST 1910	Domestic	1	

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Historic Artifact Data

Rec No.	Bag Art No.	Type	Other	Dates	Group	Qty.	Analysis Comment
34CM239		Unit: UNIT 12	Lev: 2				
6	38	1 Iron	CAST	N/A	Indeterminate	1	
7	38	2 Amber/Brown	BOTTLE	POST 1910	Domestic	1	
8	38	3 Aqua	BOTTLE	1870 - 1940	Domestic	1	
34CM315		Unit: SURF	Lev:				
94	52	1 Zinc	FRUIT JAR LID	1870 - 1930	Domestic	1	
95	52	2 Iron	TIN CAN	POST 1900	Domestic	1	
96	52	3 Stoneware	NATURAL CLAY SLIPPED INTERIOR/EXTERIOR	1875 - 1900	Domestic	2	CROSSMEND
97	52	4 Mang/Solar	BOTTLE	1880 - 1920	Domestic	1	
98	52	5 Amber/Brown	BOTTLE	1910 - 1940	Domestic	1	PROBABLY EARLY BEER BOTTLE BASE; OFF-CENTER OWENS RING
99	52	6 Lt. Green	FRUIT JAR	1905 - 1935	Domestic	1	CONTINUOUS THREAD LIP
100	52	7 Milk Glass	INSET CAPS	1900 - 1950	Domestic	2	"GENUINE BOYD"
101	53	1 Amber/Brown	BOTTLE	1910 - 1940	Domestic	2	CROSS MEND; BEER "LONG NECK"; CROWN LIP; BODY AND NECK SEAMS, NO MATCH
102	53	2 Milk Glass	INSET CAP	1900 - 1950	Domestic	1	"GENUINE BOYD"
103	53	3 Mang/Solar	TABLE	1880 - 1920	Domestic	1	PRESSED; LARGE PEDESTAL
104	53	4 Mang/Solar	TABLE	1880 - 1920	Domestic	1	PRESSED
105	53	5 Stoneware	BRISTOL SLIPPED INTERIOR/EXTERIOR	POST 1900	Domestic	1	PRINTED "4" INDICATING GALLON CAPACITY
106	53	6 Stoneware	BRISTOL SLIPPED INTERIOR/EXTERIOR	POST 1906	Domestic	1	STENCILED MAKER'S MARK W/MAPLE LEAF, "WESTERN STONEWARE CO.", MONMOUTH IL
107	53	7 Ironstone	UNDECORATED	1840 - 1910	Domestic	1	LATE; THICK CUP
34CM401		Unit: UNIT 1	Lev: 1				
14	104	1 Iron	RODS	N/A	Activities	2	
15	104	2 Copper	LIGHT BASE	POST 1930	Activities	1	LARGE FLASHLIGHT BULB BASE
34CM401		Unit: UNIT 3	Lev: 1				

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Historic Artifact Data

Rec No.	Bag Art No.	Type	Other	Dates	Group	Qty.	Analysis Comment
27	105	1	Iron	POST 1880	Architectural	1	9.5 CM (16D)
28	105	2	Aluminum	POST 1975	Domestic	1	COKE
34CM401		Unit: UNIT	3				
25	106	1	Iron	N/A	Activities	1	HEXAGON HEAD; 3 CM
26	106	2	Iron	N/A	Activities	1	
34CM401		Unit: UNIT	4				
29	107	1	Iron	N/A	Activities	1	LARGE HEXAGNOAL NUT
34CM401		Unit: UNIT	5				
31	108	1	Lt. Green	POST 1910	Domestic	1	
34CM401		Unit: UNIT	5				
16	109	1	Coal	N/A	Activities	2	
17	109	2	Iron	N/A	Indeterminate	2	THIN; FLAT
18	109	3	Copper	N/A	Indeterminate	1	THIN
19	109	4	Aqua	N/A	Architectural	1	2.6 MM THICK
20	109	5	Aqua	N/A	Architectural	1	2.2 MM THICK
21	109	6	Clear	POST 1910	Domestic	1	
34CM401		Unit: UNIT	7				
30	110	1	Iron	N/A	Architectural	3	POSSIBLY SEWER
34CM401		Unit: UNIT	7				
22	111	1	Coal	N/A	Activities	1	
23	111	2	Brass	N/A	Activities	1	.45 CALIBER; "U.S.C. CO./8"
24	111	3	Aqua	N/A	Architectural	1	3.0 MM THICK
34CM405		Unit: UNIT	1				
58	56	1	Iron	POST 1880	Architectural	1	7.6 CM (10D)
59	56	2	Iron	POST 1880	Architectural	1	6.3 CM (8D)

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Geo-Marine, Inc.
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Rec No.	Bag No.	Art Type	Other	Dates	Group	Qty.	Analysis Comment
60	56 3	Iron	WIRE NAIL	POST 1880	Architectural	1	BROKEN SPIKE
61	56 4	Iron	WIRE	N/A	Activities	1	
62	56 5	Copper	TUBE	N/A	Activities	1	
63	56 6	Mod. Plastic	N/A	POST 1942	Indeterminate	1	BRITTLE
64	56 7	Rubber	N/A	N/A	Indeterminate	1	HARD; BRITTLE
65	56 8	Iron	N/A	N/A	Indeterminate	2	THIN; FLAT
66	56 9	Iron	CROWN CAP	POST 1905	Domestic	1	
67	56 10	Iron	WASHER	N/A	Architectural	1	MAIL WASHER
68	56 11	Iron	WIRE NAIL	POST 1880	Architectural	1	SPIKE HEAD ONLY
69	56 12	Copper	BUTTON	N/A	Personal	1	2 HOLED; DECORATIVE
70	56 13	Amber/Brown	JEWEL	N/A	Personal	1	FACETED; JEWEL CUT
71	56 14	Red	TABLE	1900 - 1940	Domestic	1	
72	56 15	Depression Era	TABLE	1920 - 1950	Domestic	2	PINK
73	56 16	Mang/Solar	BOTTLE	1880 - 1920	Domestic	1	
74	56 17	Lt. Green	BOTTLE	POST 1920	Domestic	1	COKE BOTTLE
75	56 18	Emerald	BOTTLE	POST 1930	Domestic	1	
76	56 19	Depression Era	TABLE	1920 - 1950	Domestic	1	BLUE GREEN
77	56 20	Clear	BOTTLE	N/A	Domestic	3	"GIZZARD STONES"
78	56 21	Amber/Brown	BOTTLE	POST 1910	Domestic	7	
79	56 22	Amber/Brown	BOTTLE	POST 1940	Domestic	3	CORRUGATED BASES
80	56 23	Amber/Brown	BOTTLE	POST 1910	Domestic	1	CROWN LIP
81	56 24	Amber/Brown	BOTTLE	POST 1910	Domestic	1	EMBOSSED "9" AT BASE
82	56 25	Amber/Brown	BOTTLE	1929 - 1954	Domestic	1	EMBOSSED "1" IN CIRCLE AND DIAMOND, "2158"; CORRUGATED BASE
83	56 26	Clear	BOTTLE	POST 1930	Domestic	3	SOFT DRINK BOTTLE; BLUE AND WHITE ENAMELED LABELING
84	56 27	Clear	BOTTLE	POST 1910	Domestic	64	
85	56 28	Clear	BOTTLE	POST 1910	Domestic	1	SLIGHTLY MELTED
86	56 29	Clear	JAR	POST 1910	Domestic	4	CONTINUOUS THREAD LIPS
87	56 30	Clear	JAR	POST 1910	Domestic	1	"GIZZARD STONE"; CONTINUOUS THREAD LIP
88	56 31	Clear	BOTTLE	POST 1910	Domestic	1	OWENS RING
89	56 32	Clear	BOTTLE	1929 - 1953	Domestic	1	MAKER'S MARK "U" IN A KEYSTONE PA BOTTLE CO.,

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Historic Artifact Data

Rec No.	Bag No.	Art Type	Other	Dates	Group	Qty.	Analysis Comment
90	56 33	Clear	BOTTLE	POST 1945	Domestic	1	SHEFFIELD, PA "G" INTERLOCKING "C" MAKER'S MARK GLASS CONTAINERS CORP, FULLERTON, CA
91	56 34	Clear	TABLE	POST 1900	Domestic	1	DRINKING GLASS RIM
92	56 35	Stoneware	BRISTOL SLIPPED INTERIOR/EXTERIOR	POST 1900	Domestic	1	
93	56 36	Whiteware	IVORY TINTED	POST 1920	Domestic	1	RELIEF MOLDED "FLUTES"
34CM405	Unit: UNIT 1	Lev: 2					
55	57 1	Clear	BOTTLE	POST 1910	Domestic	2	
56	57 2	Amber/Brown	BOTTLE	POST 1910	Domestic	1	
57	57 3	Clear	TABLE	POST 1900	Domestic	1	RIM
34CM405	Unit: UNIT 2	Lev: 1					
38	58 1	Clear	BOTTLE	POST 1910	Domestic	1	
34CM405	Unit: UNIT 3	Lev: 1					
51	59 1	Coal	N/A	N/A	Activities	3	
52	59 2	Iron	WIRE NAIL	POST 1880	Architectural	1	6.3 MM (8D)
53	59 3	Aqua	JAR	1870 - 1940	Domestic	2	FRUIT JAR
54	59 4	Aqua	JAR	1870 - 1940	Domestic	1	FRUIT JAR LIP
35	60 1	Coal	N/A	N/A	Activities	3	
36	60 2	Stoneware	BRISTOL SLIPPED INTERIOR/EXTERIOR	POST 1900	Domestic	1	
34CM405	Unit: UNIT 5	Lev: 1					
39	61 1	Iron	WIRE SPIKE	POST 1880	Architectural	1	13.8 CM
34CM405	Unit: UNIT 6	Lev: 1					
40	62 1	Coal	N/A	N/A	Activities	1	
41	62 2	Iron	CAN	POST 1900	Domestic	11	
42	62 3	Rubber	N/A	N/A	Indeterminate	1	BLACK; GROOVED

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Rec No.	Bag No.	Art Type	Other	Dates	Group	Qty.	Analysis Comment
43	62 4	Aqua	JAR	1910 - 1940	Domestic	1	SLIGHTLY MELTED LIP
44	62 5	Clear	BOTTLE	POST 1910	Domestic	3	
45	62 6	Clear	BOTTLE	N/A	Domestic	9	HEAT FRACTURED OR MELTED
46	62 7	Lt. Green	WINDOW	N/A	Architectural	1	2.5 MM THICK
34CM405	Unit: UNIT 6	Lev: 2					
32	63 1	Iron	N/A	N/A	Indeterminate	2	THIN; FLAT
33	63 2	Clear	BOTTLE	POST 1910	Domestic	1	
34	63 3	Clear	N/A	N/A	Indeterminate	1	BURNED; MELTED
34CM405	Unit: UNIT 8	Lev: 1					
47	64 1	Iron	CAST	N/A	Indeterminate	1	TAPERED; T-SHAPED
34CM405	Unit: UNIT 9	Lev: 1					
48	65 1	Iron	WIRE NAIL	POST 1880	Architectural	1	6.3 CM (8D)
49	65 2	Lt. Green	WINDOW	N/A	Architectural	2	3.1 MM THICK
50	65 3	Lt. Green	WINDOW	N/A	Architectural	1	2.2 MM THICK
34CM405	Unit: UNIT 10	Lev: 1					
37	71 1	Iron	WIRE NAIL	POST 1880	Architectural	1	8.9 CM (16D)
34CM414	Unit: SURF	Lev:					
251	90 1	Whiteware	UNDECORATED	POST 1890	Domestic	1	RIM
252	90 2	Ironstone	UNDECORATED	1840 - 1910	Domestic	1	RIM
253	90 3	Clear	FRUIT JAR	1900 - 1942	Domestic	1	LIGHTNING BAIL LID
254	90 4	Aqua	FRUIT JAR	1905 - 1935	Domestic	1	CONTINUOUS THREAD LIP
255	90 5	Clear	BOTTLE	1920 - 1964	Personal	1	HAZEL-ATLAS GLASS CO. WHEELING WV; HAIR TONIC BOTTLE
256	90 6	Clear	BOTTLE	1911 - 1929	Domestic	1	"O" IN A SQUARE; OWENS BOTTLE CO., TOLEDO, OH; CONDIMENT BOTTLE; BEAD RIM
214	91 1	Iron/Brass	GEAR	N/A	Domestic	1	CLOCK GEAR
215	91 2	Stoneware	BRISTOL SLIPPED	POST 1900	Domestic	1	

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Rec No.	Bag Art No.	Type	Other	Dates	Group	Qty.	Analysis Comment
216	91 3	Whiteware	INTERIOR/EXTERIOR DARK IVORY TINTED	POST 1930	Domestic	1	BOWL BASE; MOLDED
217	91 4	Whiteware	LIGHT IVORY TINTED	POST 1920	Domestic	1	MOLDED RIM
218	91 5	Whiteware	DECORATED	POST 1890	Domestic	1	SMALL FLORAL MOLDED; ROYAL RIM
219	91 6	Whiteware	DECORATED	POST 1890	Domestic	1	LARGE FLORAL MOLDED; PLAIN RIM
220	91 7	Whiteware	DECORATED	1895 - 1950	Domestic	1	POLYCHROME FLORAL OVER-THE-GLAZE DECALCOMANIA; MOLDED MARLEY
221	91 8	Whiteware	DECORATED	1920 - 1950	Domestic	1	PINK AND BLUE BANDS
222	91 9	Porcelain	DECORATED	1895 - 1950	Domestic	2	POLYCHROME FLORAL OVER-THE-GLAZE DECALCOMANIA WITH GILDED BANDS
223	91 10	Mod. Plastic	BUTTON	POST 1942	Personal	1	4-HOLED; HALF BUTTON
224	91 11	Depression Era	TABLE	1920 - 1950	Domestic	1	GREEN; SMALL BOWL RIM WITH FLUTED INTERIOR
225	91 12	Depression Era	TABLE	1920 - 1950	Domestic	1	PINK; SUNBURST PATTERN BASE
226	91 13	Milk Glass	TABLE	1890 - 1960	Domestic	2	PRESSED FLORAL DESIGN WITH COLORED RIM TREATMENT
227	91 14	Clear	TABLE	1920 - 1950	Domestic	2	SQUARE SHAPED BASE; PRESSED DRINKING GLASS
228	91 15	Clear	TABLE	1920 - 1950	Domestic	1	MOLDED BOWL RIM
229	91 16	Amber/Brown	BOTTLE	POST 1940	Domestic	1	CORRUGATED ROUND BASE; "DURAGLAS" MAKER'S MARK
230	91 17	Cobalt	BOTTLE	1890 - 1960	Domestic	1	CONTINUOUS THREAD LIP
231	91 18	Clear	BOTTLE	1911 - 1929	Domestic	1	"O" IN SQUARE MAKER'S MARK; OWENS BOTTLE CO. TOLEDO, OH
232	91 19	Aqua	BOTTLE	1910 - 1940	Domestic	1	RECTANGULAR BASE WITH DIAMOND MAKER'S MARK
34CM414	Unit: UNIT	1	Lev: 1				
241	82 1	Clear	BOTTLE	POST 1910	Domestic	4	
34CM414	Unit: UNIT	2	Lev: 1				
243	83 1	Iron	WIRE NAILS	POST 1880	Architectural	2	5.1 CM (60)
244	83 2	Stoneware	BRISTOL SLIPPED INTERIOR/EXTERIOR	POST 1900	Domestic	1	
34CM414	Unit: UNIT	3	Lev: 1				
237	84 1	Emerald	BOTTLE	POST 1930	Domestic	1	

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Rec No.	Bag No.	Art Type	Other	Dates	Group	Qty.	Analysis Comment
238	84	2	Iron	POST 1905	Domestic	1	
239	84	3	Yellowware	1920 - 1950	Domestic	2	CROSSHEND; PINK AND BLUE BANDS
34CM414		Unit: UNIT 3	Lev: 2				
233	85	1	Iron	POST 1880	Architectural	1	6.3 CM (80)
234	85	2	Graphite	POST 1910	Activities	1	
235	85	3	Emerald	POST 1930	Domestic	1	
236	85	4	Clear	POST 1910	Domestic	1	
34CM414		Unit: UNIT 4	Lev: 1				
197	86	1	Iron	POST 1880	Architectural	25	6.3 CM (80)
198	86	2	Iron	POST 1880	Architectural	5	8.9 CM (160)
199	86	3	Iron	POST 1880	Architectural	13	2.5 CM; ROOFING TACKS
200	86	4	Iron	POST 1880	Architectural	3	2.5 CM (20)
201	86	5	Iron	POST 1880	Architectural	1	4.4 CM (50)
202	86	6	Iron	POST 1880	Architectural	6	5.1 CM (60)
203	86	7	Iron	POST 1880	Architectural	8	4.4 CM (50); FLOORING NAILS
204	86	8	Iron	POST 1880	Architectural	1	6.3 CM (80); FLOORING NAIL
205	86	9	Iron	POST 1880	Architectural	1	BROKEN
206	86	10	Iron	N/A	Activities	1	
207	86	11	Iron	N/A	Activities	1	
208	86	12	Iron	N/A	Activities	4	
209	86	13	Iron	N/A	Activities	1	
210	86	14	Iron	N/A	Activities	1	MACHINE PART; FITTED
211	86	15	Asphalt shingle	POST 1920	Architectural	23	
212	86	16	Aqua	N/A	Architectural	2	2.4 MM THICK
213	86	17	Clear	POST 1910	Domestic	1	
34CM414		Unit: UNIT 9	Lev: 1				
245	87	1	Iron	POST 1880	Architectural	1	15.5 CM
246	87	2	Iron	POST 1880	Architectural	1	6.3 CM (80)
247	87	3	Aqua	N/A	Architectural	1	9.3 MM THICK

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Rec No.	Bag No.	Art Type	Other	Dates	Group	Qty.	Analysis Comment
248	87	4	Amber/Brown	BOTTLE	POST 1910	Domestic	1
249	87	5	Clear	BOTTLE	POST 1910	Domestic	1 RELIEF MOLDED
250	87	6	Clear	BOTTLE	POST 1910	Domestic	1
34CM414			Unit: UNIT				
242	88	1	Clear	Lev: 2 TABLE	POST 1910	Domestic	4 DRINKING GLASS BASE
34CM414			Unit: UNIT				
240	89	1	Aqua	Lev: 3 BOTTLE	POST 1910	Domestic	2 CROSSMEND
34CM418			Unit: UNIT				
143	66	1	Milk Glass	Lev: 1 BOTTLE	1890 - 1960	Domestic	1
144	66	2	Aqua	FRUIT JAR	1880 - 1935	Domestic	2
145	66	3	Amber/Brown	BOTTLE	POST 1910	Domestic	3
146	66	4	Whiteware	UNDECORATED	POST 1890	Domestic	4
34CM418			Unit: UNIT				
153	67	1	Ironstone	Lev: 1 BLUE TINTED	1850 - 1910	Domestic	1
34CM418			Unit: UNIT				
147	68	1	Mang/Solar	Lev: 1 BOTTLE	1880 - 1920	Domestic	1
148	68	2	Aqua	FRUIT JAR	1880 - 1935	Domestic	1
149	68	3	Clear	BOTTLE	POST 1910	Domestic	1
150	68	4	Whiteware	UNDECORATED	POST 1890	Domestic	1
34CM418			Unit: UNIT				
164	69	1	Stoneware	Lev: 1 BRISTL SLIPPED INTERIOR/EXTERIOR	POST 1900	Domestic	1
165	69	2	Amber/Brown	N/A	N/A	Indeterminate	1 MELTED
166	69	3	Iron	WIRE SPIKE	POST 1880	Architectural	1 11.4 CM (30D)
34CM418			Unit: UNIT				
				Lev: 1			

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Rec No.	Bag No.	Art Type	Other	Dates	Group	Qty.	Analysis Comment
151	70	1 Iron	WIRE NAILS	POST 1880	Architectural	3	ROOFING NAILS; 1.9 CM
152	70	2 Clear	BOTTLE	POST 1910	Domestic	1	
34CM418		Unit: UNIT 7	Lev: 1				
154	72	1 Iron	WIRE NAIL	POST 1880	Architectural	1	10.2 CM (200)
155	72	2 Iron	WIRE NAIL	POST 1880	Architectural	1	6.3 CM (80)
156	72	3 Iron	WIRE	N/A	Activities	1	
157	72	4 Clear	BOTTLE	POST 1910	Domestic	3	
158	72	5 Amber/Brown	N/A	N/A	Indeterminate	5	MELTED GLOB AND PIECES
159	72	6 Mang/Solar	BOTTLE	1905 - 1920	Domestic	1	CROWN CAP LIP
160	72	7 Mang/Solar	BOTTLE	1880 - 1920	Domestic	1	
161	72	8 Stoneware	NATURAL CLAY SLIPPED INTERIOR/EXTERIOR	1875 - 1900	Domestic	1	
162	72	9 Stoneware	SALT GLAZED EXTERIOR/NATURAL CLAY INTER.	1865 - 1900	Domestic	1	
163	72	10 Stoneware	SALT GLAZED EXTERIOR/NATURAL CLAY INTER.	1865 - 1900	Domestic	1	LARGE MOUTH JAR; ROLLED AND FLATTENED RIM
34CM428		Unit: UNIT 1	Lev: 1				
173	92	1 Iron	WIRE NAIL	POST 1880	Architectural	1	8.9 CM (160)
174	92	2 Iron	WIRE NAIL	POST 1880	Architectural	1	6.3 CM (80)
175	92	3 Amber/Brown	BOTTLE	POST 1910	Domestic	4	
176	92	4 Amber/Brown	BOTTLE	POST 1910	Domestic	1	RELIEF MOLDED
34CM428		Unit: UNIT 1	Lev: 2				
169	93	1 Iron	WIRE NAIL	POST 1880	Architectural	1	2.5 CM (20)
170	93	2 Cobalt	BOTTLE	1890 - 1960	Domestic	1	
171	93	3 Amber/Brown	BOTTLE	POST 1910	Domestic	1	
172	93	4 Whiteware	COLOR GLAZED	1930 - 1960	Domestic	1	FIESTA-TYPE; GREEN

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Rec No.	Bag Art No.	Type	Other	Dates	Group	Qty.	Analysis Comment
34CM428	193	Unit: UNIT 2	Lev: 1				
	94	1 Iron	WIRE NAILS	POST 1880	Architectural	2	10.8 CM (20D)
	94	2 Iron	WIRE NAILS	POST 1880	Architectural	3	5.1 CM (6D)
	94	3 Iron	WOOD SCREW	N/A	Architectural	1	1.9 CM; REGULAR GROOVED HEAD
34CM428	182	Unit: UNIT 3	Lev: 1				
	95	1 Clear	BOTTLE	POST 1910	Domestic	1	
	95	2 Iron	WIRE NAILS	POST 1880	Architectural	3	5.1 CM (6D)
	95	3 Iron	WIRE NAIL	POST 1880	Architectural	1	2.5 CM(2D)
	95	4 Iron	WIRE NAIL	POST 1880	Architectural	1	6.3 CM (8D)
	95	5 Iron	WIRE NAILS	POST 1880	Architectural	2	BROKEN
34CM428	187	Unit: UNIT 3	Lev: 2				
	96	1 Brass/Copper	BRAD/RIVET	N/A	Activities	1	GROOVED HEAD
	96	2 Lt. Green	WINDOW	N/A	Architectural	1	2.2 MM THICK
34CM428	178	Unit: UNIT 4	Lev: 1				
	103	1 Aqua	WINDOW	N/A	Architectural	1	2.1 MM THICK
34CM428	189	Unit: UNIT 5	Lev: 1				
	97	1 Iron	WIRE NAIL	POST 1880	Architectural	1	6.3 CM (8D)
	97	2 Iron	WIRE	N/A	Activities	2	
34CM428	191	Unit: UNIT 5	Lev: 2				
	98	1 Clear	LIGHT BULB	POST 1930	Domestic	1	
	98	2 Iron	WIRE NAIL	POST 1880	Architectural	1	BROKEN
34CM428	181	Unit: UNIT 7	Lev: 1				
	99	1 Iron	WIRE NAIL	POST 1880	Architectural	1	1.9 CM; ROOFING NAIL
34CM428	179	Unit: UNIT 7	Lev: 2				
	139	1 Iron	WIRE NAILS	POST 1880	Architectural	2	BROKEN

Date: 04/09/96

Geo-Marine, Inc.
#1110-036 Fort Sill Testing
Historic Artifact Data

Rec No.	Bag Art No.	Type	Other	Dates	Group	Qty.	Analysis Comment
34CM428	Unit: UNIT 8	Lev: 1					
180	101	1 Aqua	WINDOW	N/A	Architectural	1	2.4 MM THICK
34CM428	Unit: UNIT 8	Lev: 2					
177	102	1 Iron	WIRE NAIL	POST 1880	Architectural	1	5.1 CM (6D)
34CM488	Unit: UNIT 1	Lev: 1					
132	73	1 Whiteware	UNDECORATED	POST 1890	Domestic	1	RIM
133	73	2 Clear	BOTTLE	POST 1910	Domestic	1	
34CM488	Unit: UNIT 1	Lev: 2					
119	74	1 Mang/Solar	BOTTLE	1880 - 1920	Domestic	2	
120	74	2 Clear	BOTTLE	POST 1910	Domestic	1	
34CM488	Unit: UNIT 2	Lev: 1					
121	75	1 Iron	WIRE SPIKE	POST 1880	Architectural	1	HEAD BROKEN OFF AND BENT INTO "J" HOOK
34CM488	Unit: UNIT 3	Lev: 1					
108	76	1 Iron	WIRE NAILS	POST 1880	Architectural	43	6.3 CM (8D)
109	76	2 Iron	WIRE NAILS	POST 1880	Architectural	3	8.9 CM (16D)
110	76	3 Iron	WIRE NAIL	POST 1880	Architectural	1	9.5 CM (16D)
111	76	4 Iron	WIRE NAILS	POST 1880	Architectural	9	5.1 CM (6D)
112	76	5 Iron	WIRE NAIL	POST 1880	Architectural	1	3.8 (4D)
113	76	6 Iron	WIRE NAIL	POST 1880	Architectural	1	5.7 CM (7D)
114	76	7 Iron	WIRE NAILS	POST 1880	Architectural	11	3.2 CM (3D)
115	76	8 Iron	WIRE SPIKE	POST 1880	Architectural	1	12.7 CM (40D)
116	76	9 Iron	WIRE NAILS	POST 1880	Architectural	12	BROKEN
117	76	10 Iron	TIN CAN	POST 1900	Domestic	4	
118	76	11 Iron	WIRE	N/A	Activities	1	

Date: 04/09/96

Geo-Marine, Inc.
#1110-036 Fort Sill Testing
Historic Artifact Data

Rec No.	Bag Art No.	Type	Other	Dates	Group	Qty.	Analysis Comment
34CM488	Unit: UNIT	3	Lev: 2				
123	77 1	Iron	WIRE NAILS	POST 1880	Architectural	2	6.3 CM (8D)
124	77 2	Iron	WIRE NAIL	POST 1880	Architectural	1	5.1 CM (6D)
125	77 3	Iron	WIRE NAIL	POST 1880	Architectural	1	3.8 CM (4D)
126	77 4	Iron	WIRE NAIL	POST 1880	Architectural	1	3.2 CM (3D)
127	77 5	Iron	WIRE	N/A	Activities	1	
128	77 6	Iron	CAST	N/A	Indeterminate	1	
129	77 7	Aqua	WINDOW	N/A	Architectural	1	2.8 MM THICK
130	77 8	Aqua	BOTTLE	1910 - 1940	Domestic	2	
131	77 9	Whiteware	UNDECORATED	POST 1890	Domestic	1	RIM
34CM488	Unit: UNIT	4	Lev: 1				
139	78 1	Stoneware	DRY	N/A	Activities	1	FLUTED FLOWER POT
140	78 2	Iron	INTERIOR/EXTERIOR	POST 1940	Domestic	2	RATIONS CAN
141	78 3	Clear	TIN CAN	POST 1910	Domestic	1	
34CM488	Unit: UNIT	4	Lev: 2				
134	79 1	Iron	WIRE NAIL	POST 1880	Architectural	1	6.3 CM (8D)
135	79 2	Iron	WIRE NAIL	POST 1880	Architectural	1	BROKEN
34CM488	Unit: UNIT	4	Lev: 3				
122	80 1	Iron	WIRE NAIL	POST 1880	Architectural	1	8.3 CM (12D)
34CM488	Unit: UNIT	7	Lev: 1				
136	81 1	Emerald	BOTTLE	POST 1930	Domestic	1	
137	81 2	Iron	WIRE	N/A	Activities	1	
138	81 3	Iron	TIN CAN	POST 1940	Domestic	3	RATIONS CAN; "B-3 UNIT/CRACKERS"

APPENDIX D

ANALYSIS OF THE FAUNAL MATERIAL

by
Brian S. Shaffer
Zooarcheology Laboratory
Institute of Applied Sciences
University of North Texas

Qty	Bag No.	Site Number	Unit Type	Unit No.	Lev	Top Elev	Bot. Elev	Taxon	Element	Portion of Element	Side	Comments
2	18	34Cm-042	UNIT	3	5	40	50	Vertebrata	Indeterminate	Fragment		Light Weathering, Angular Break
7	26	34Cm-407	UNIT	9	3	20	30	Mammalia (medium/large)	Indeterminate	Fragment		Light Weathering, Angular Break
1	112	34Cm-107	BHT	1	0	15	15	Mammalia (medium/large)	Indeterminate	Fragment		Light Weathering, Spiral Break
1	113	34Cm-107	BHT	1	0	44	44	<i>Equus</i> sp.	Metapodial	Distal end		Light Weathering, Spiral Break
3	113	34Cm-107	BHT	1	0	44	44	Mammalia (medium/large)	Indeterminate	Fragment		Light Weathering, Angular Break
1	114	34Cm-107	BHT	2	0	49	49	Mammalia	Rib	Vertebral end	Left	Light Weathering, Angular Break, Rodent-Gnawed, Band-Sawed
22	115	34Cm-107	UNIT	1	2	10	20	Mammalia (medium/large)	Indeterminate	Fragment		Lengthwise—Pig Back Rib Cut?
38	115	34Cm-107	UNIT	1	2	10	20	Vertebrata	Indeterminate	Fragment		Light Weathering, Angular Break
1	115	34Cm-107	UNIT	1	2	10	20	Mammalia (medium/large)	Indeterminate	Fragment		Light Weathering, Angular Break
1	115	34Cm-107	UNIT	1	2	10	20	Mammalia (medium/large)	Indeterminate	Fragment		Marked Weathering, Angular Break
1	116	34Cm-107	UNIT	1	3	20	30	Mammalia (medium/large)	Indeterminate	Fragment		Light Weathering, Spiral Break
1	117	34Cm-107	UNIT	3	3	30	40	Mammalia (medium/large)	Indeterminate	Fragment		Light Weathering, Spiral Break
1	118	34Cm-107	UNIT	5	1	0	10	Mammalia (Medium/large)	Indeterminate	Fragment		Light Weathering, Angular Break
1	119	34Cm-107	UNIT	5	2	10	20	cf. <i>Bos/Bison</i>	Femur	Proximal	Right	Light Weathering, Spiral Break
1	119	34Cm-107	UNIT	5	2	10	20	Mammalia (Medium/large)	Indeterminate	Fragment		Light Weathering, Angular Break
1	120	34Cm-107	UNIT	5	2	10	20	cf. <i>Bos/Bison</i>	Axis	Transverse split, cranial part	Axial	Light Weathering, Angular Break
10	121	34Cm-107	UNIT	5	2	10	20	Mammalia (Medium/large)	Indeterminate	Fragment		Light Weathering, Angular Break
6	121	34Cm-107	UNIT	5	2	10	20	Mammalia (Medium/large)	Cranium	Fragment		Light Weathering, Angular Break
1	121	34Cm-107	UNIT	5	2	10	20	Mammalia (Large/very large)	Indeterminate	Fragment		Light Weathering, Angular Break
23	121	34Cm-107	UNIT	5	2	10	20	Vertebrata	Indeterminate	Fragment		Light Weathering, Angular Break
3	122	34Cm-107	UNIT	5	3	20	30	Mammalia (Medium/large)	Indeterminate	Fragment		Light Weathering, Angular Break
1	123	34Cm-107	UNIT	5	4	30	40	Mammalia (Medium/large)	Indeterminate	Fragment		Light Weathering, Spiral Break
1	138	34Cm-239	UNIT	4	1	0	10	Mammalia (Medium/large)	Indeterminate	Fragment		Light Weathering, Spiral Break
1	146	34Cm-488	UNIT	7	1	0	10	<i>Terrapene</i> sp.	Peripheral	Complete		Light Weathering, Unbroken

129 Total Specimens Recovered